TRENDS

Project Concluding Meeting
TRENDS User Group Meeting
Workshop on Networks and Teachers Training

Athens, 16-18 September 1998

Armonia Hotel,
1, Armonias Str., Vouliagmeni •Tel.: +301 8960105

FIRST DAY: **Wednesday, 16 September**

Project Meeting

15:00 - 17:00

- **Welcome**
- **Introduction - Presentation of the agenda**
- **Final Report on the demonstration phase of the project and future plans.**

  Discussion on the application and usability of the training model and the future plans of the European Teachers Training Network.

The discussion will be based on the reports submitted by the Training Centres for the preparation of the deliverable D7.3 (Results, assessment).
Introduction by the *WP7 Leader (CET)*
Presentations by the *Training Centres (10 min.)*

- **Concluding remarks** (to be communicated to the "User Group")

17:00 - 17:15 **Coffee break**

17:15 - 18:00

- **Evaluation Report at national and European level**

  Presentation of the final evaluation procedure.
  SCIENTER - Tavistock Institute (20 min.)

18:00 - 20:00

- **Exploitation Plan**

  Introduction and discussion on the final exploitation plan and the *Network Steering Committee* synthesis.
  Introduction - Presentation by the *WP9 Leader (PLANET) (20 min.)*

- **Concluding remarks** (to be communicated to the "User Group")

20:00 **End of the first day**

***SECOND DAY*:** **Thursday, 17 September**

USER GROUP Meeting

9:30 - 11:00

- **Welcome - Introduction**

- **Evaluation process and intermediate evaluation results.**

Presentation of the *Intermediate Evaluation Report* and the final evaluation procedure.
SCIENTER - Tavistock Institute (20 min.)

11:00 - 11:15 **Coffee break**

11:15 - 13:00

- **Conclusions and assessment**

Presentation and discussion on the conclusions and assessment on the validity of the proposed framework .
Introduction by *CET* - Presentations by the *Training Centres (10 min.)*

13:00 - 14:30 **Lunch break**

14:30 - 16:15

- **Final Exploitation Plan:** Introduction

Presentation and discussion on the exploitation plans.
Introduction by *PLANET - LRF (20 min.)*

16:15 - 16:30 **Coffee break**

16:30 - 17:30

Recommendations by the User Group - Reporting

17:30 **End of the 2nd day**

21:00 **DINNER**

THIRD DAY: **Friday, 18 September**

WORKSHOP: School-Networks and Teachers Training

Organised by the Hellenic Pedagogical Institute and the Lambrakis Research Foundation

Participants: EC Projects representatives - T3, EUN, TRENDS
Members of the TRENDS User Group.

9:00 - 10:30

- **Introduction**

- **School-Networks and Teachers Training:**
  Projects outcomes, experiences.
  Three presentations TRENDS, T3, EUN (20 min.) - Discussion

10:30 - 10:45 **Coffee break**

10:45 - 13:00

Discussion on:
- Distance learning models
- School-networks: network facilities, access to Internet.
- Organisational shift
- Content: Training material, language and cultural barriers.

13:00 - 14:30 **Lunch break**

14:30 - 16:30

- **Future actions and exploitation of the projects outcomes.**
- **Concluding remarks - "Communication Document"**

16:30 **END OF THE WORKSHOP**

TRENDS - Concluding Meeting

Project Steering Board
User Group

Athens, 16 - 18 September, 1998

FIRST DAY: **Wednesday, 16 September**

15:00 - 17:00

- **Welcome**
- **Introduction - Presentation of the agenda**

- **Final Report on the demonstration phase of the project and future plans.**

Discussion on the application and usability of the training model and the future plans of the European Teachers Training Network.

The discussion will be based on the reports submitted by the Training Centres for the preparation of the deliverable D7.3(Results, assessment).
Introduction by the WP7 Leader (CET), presentations by the Training Centres.

17:00 - 17:15 **Coffee break**

17:15 - 18:00

- **Final evaluation results**
  Brief presentation of the Final Evaluation Report
  SCIENTER - Tavistock Institute

18:00 - 20:00

- **Exploitation Plan**

Introduction and discussion on the final exploitation plan. Network Steering Committee synthesis.
Introduction - Presentation by the WP9 Leader (PLANET).

20:00 **End of the first day**

SECOND DAY: Thursday, 17 September

➢ ***With the participation of the USER GROUP members***

9:30 - 11:00

- **Final Evaluation Results**

Presentation of the *Evaluation Report* on the final results.
SCIENTER - Tavistock Institute

11:00 - 11:15 **Coffee break**

11:15 - 13:00

- **Conclusions and assessment**

Presentation and discussion on the draft version of D7.5: *Conclusions and assessment on the validity of the proposed framework* .
CET - Training Centres

13:00 - 14:30 **Lunch break**

14:30 - 17:30

- **Final Exploitation Plan:** Introduction

Presentation and discussion on the exploitation plans.
PLANET - LRF

17:30 **End of the second day**

21:00 **Dinner**

THIRD DAY: Friday, 18 September

➢ ***Workshop*: School-Networks and Teachers Training**
Organised by the Hellenic Pedagogical Institute and the Lambrakis Research Foundation

Participants: EC Projects representatives - T3, EUN, TRENDS
Members of the TRENDS User Group.

9:30 - 11:00

- **Introduction**
- **School-Networks and Teachers Training:**
  Projects outcomes, experiences.
  Twenty minutes presentations (3) - Discussion

11:00 - 11:15 **Coffee break**

11:15 - 13:00

- **Discussion on future actions and exploitation of the projects outcomes.**

13:00 - 14:30 **Lunch break**

14:30 - 16:30

- **Concluding remarks**

16:30 **End of the workshop**

TRENDS

Project Concluding Meeting
TRENDS User Group Meeting
Workshop on Networks and Teachers Training

Athens, 16-18 September 1998

THIRD DAY: **Friday, 18 September**

WORKSHOP: School-Networks and Teachers Training

Organised by the Hellenic Pedagogical Institute and the Lambrakis Research Foundation

Participants: Partners of European Projects T3 & TRENDS
European SchoolNet (EUN) representatives
Members of the TRENDS User Group

9:00 - 10:30

- **Welcome, introduction to the Workshop's objectives**
- **School-Networks and Teachers Training:**

  T3 and TRENDS: Teachers Training with/on ICTs - projects outcomes, experiences.

  EUN and Teachers Training

  Discussion

10:30 - 10:45 **Coffee break**

10:45 - 12:30

Two Parallel Sessions on:

- *Training materials, content, didactics*
- *Scalability – economics, organisational framework*

12:30 - 13:30

Plenary meeting: conclusions, recommendations for further actions

13:30 - 15:00 **Lunch break**

15:00-16:30

- *Dissemination of "Lessons Learnt" and future actions*
- *Concluding remarks - "Communication Document"*

16:30 **END of the Workshop and the TRENDS Meeting**

TRENDS PROJECT

Deliverable D.9.1

Interim Exploitation Strategy

Prepared by

PLANET S.A. & LAMBRAKIS RESEARCH FOUNDATION

in collaboration with:

CRDP Rennes (FR)

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September 1998

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EXECUTIVE SUMMARY

The main scope of this document is at first to present the experience originated at national level, from the operation of the Training Centres in the life of TRENDS up to the current period, and to facilitate the adoption of an exploitation strategy for every participating Centre, which will be targeted towards the national environment and contribute to the development of the TRENDS Network's exploitation plan at european level, at the same time.

The necessary information was collected and analysed through a four-step approach (*Analysis, Planning, Implementation* and *Evaluation*), that supports the presentation and filtering of the national case experiences and can also be used for the definition of the potential of TRENDS project results, both for the national/regional education communities («markets») and for the european scale as well.

II. INTRODUCTION

The aim of this project deliverable is to present an account of all the local experiences and approaches, from the operation of the Training Centres in the life of TRENDS up to the current period and to facilitate the adoption of an exploitation strategy for every participating Centre, which will be targeted towards the national environment and at the same time contribute to the development of the TRENDS Network's exploitation plan at european level.

This strategy is being formulated from the existing experience of the operation of the Training Centres, considering the differences originated from the national education particularities, but with the main scope to provide a relatively common approach.

The necessary information was collected and analysed through a four-step approach, that supports the presentation and filtering of the national case experiences and can also be used for the definition of the potential of TRENDS project results, both for the national/regional education communities («markets») and for the european scale as well. The four steps correspond to the following:

❶ ***Analysis*** of the national environment
As a first step, the current situation concerning the environment and the framework in which the teachers training is taking place, is presented. The situation seems relatively similar, almost in all the participating countries. In all the national cases the appointed Training Centre, member of the TRENDS Network, is considered an official teachers training centre providing accredited training. The collaboration of each Training Centre with the Ministry of Education is also considered part of the «puzzle» to be analysed. In short, this step corresponds to a presentation of the organisational and operational framework in every country and an external and internal environment analysis as well.

❷ ***Planning*** for the major aspects of the implementation of school-based training
The second step corresponds to information related to the three major areas of the implementation of the distance, school-based training of the about 120 teachers in each national environment, namely the aspects of the pedagogy, the content and the technology.

❸ ***Implementation*** of the teachers training
The next step of the approach addresses the information about the actual results from the operation of each Training Centre.

❹ ***Evaluation*** of the operations and the results
The final step consists in the use of the information coming as an output of the formative project evaluation process, in order to reach some common guidelines to support efforts that could address the European «market» (educational communities). While the first three step of the approach are national/regional specific, this last step adresses the issue of assessing the success of Europe-wide ventures of this type on an «intra-national» basis. Thus, contributing to the building of the TRENDS Network strategy at European level.

Following the four-step approach, the present document outlines the prevailing conditions and the planning and implementation of the TRENDS training activities in each of the six national environments (the «National Cases»). Then, it refers to the

intermediate results of the evaluation process, providing some evidence through the basic criteria used in the adopted evaluation framework.

After the presentation of the relative information, generated from the work of the TRENDS Centres, together with the other project partners, in dealing with schools and school teachers in real conditions, the document summarises the results of this common effort, in terms of possibly further exploitable products. This is being done by focusing on those ***results that can be considered of interest***:

- ✓ ***for the educational and school authorities in the European countries as well as for the telecom operators and the Internet providers***, meaning the TRENDS distance, school-based training model, the tools to support the provision of distance learning services in a problematic telecommunication infrastructure and the «Operations Manual» to set-up the distance training unit and provide the services to schools;
- ✓ ***for the schools and school teachers***, meaning the training courses which address the needs of the «school leaders» (the facilitators of distance training at schools) and of the teachers, in order to acquire competences on using the information and communication technology in the teaching/learning process.

Special reference is made in this document to the exploitation potentialities of each Training Centre (TC), while the last part is presenting those concluding remarks that can correspond to principles in the TRENDS partners' effort to develop and agree upon a common exploitation strategy that could meet the raising needs of training of teachers at the european scale.

IV. THE NATIONAL CASES

4. FRANCE

ANALYSIS

In France, the TRENDS Training Centre is located in the Regional Authority of CNDP in Rennes, where the server to support the delivery of distance training materials and other services is also based. With the Rennes CRDP's coordination, the training activities are carried out by four Regional Education Authorities (Rennes being one pf them). In these activities both the corresponding CRDP and MAFPEN (secondary teachers in-service training authority) in each region are collaborating.

In each of the four Regional Authorities, there is a Training Unit, acting as the TRENDS Centre's agency with, at least, one training multimedia room, where connection to the national Training Centre's server via the RENATER network, is being provided to teachers (trainees).

The French organisation is fully backed by the Ministry of Education, which allows for extra time to be allocated to the TRENDS school-leaders in order to facilitate the training of their teacher colleagues.

PLANNING

As far as the structure of the training system is concerned, the following practice has been scheduled in France.

In terms of the pedagogical/didactic approach, the basic Open and Distance Learning scenarios of the TRENDS model were used in order to support:

a) A three day academic training about ICTs, in the Training Units in the four Regions, training that is dealing with principles and basic knowledge of the Internet and related tools: e-mail, fora, browsers, searching the WEB. This intensive introductory course, consisted of lectures and some hours for practice with the PC and the Internet (hands-on), addresses the needs of the school-leaders.

b) The supported self-learning scenario is being employed in the case of the teachers using the data-base of the education web sites. This is considered to be the starting for the familirization with the practice to navigate through the Internet and visit/assess web sites.

c) Then, the collaborative learning scenario is being applied in learning processes where teachers are building pedagogical multimedia sequences, for a given subject and grade, to be made available on line. In these cases, the school-leaders are the tutors, providing guidance by using e-mail as well as the especially established discussion forum.

In order to stimulate teachers involvement and collaborative project work, the French TC has made available databases, facilitated communication and developed collaboration through the co-ordinators in the CRDPs (one for pedagogical issues and another one for the more technical work).

As far as the training materials (content) is concerned, in the framework of the teachers training activities of TRENDS a database (evaluated web sites) and a questionnaire as a

set of common tools for training are being used. A major effort, both in the French environment and at european level, has been made to adopt, as far as possible, a modular approach to the provision of training, in order to individualise the training «profile», by respecting subject and grade related necessities as well as the background knowledge of each trainee.

By continuing and embedding the «building» of multimedia-based learning scenarios in the teachers training activities, there will also be a sort of validation of the relevance of the web sites included in the database, in terms of subjects, grades and curricula in general.

In order to be coherent with the European context and contribute to the development of results with a European added value, the TRENDS project partners agreed that the evaluation of education related web sites should be adopted by all the TCs and that evaluation should be tested against differing country environments.

IMPLEMENTATION

The 400 secondary school teachers being trained during the TRENDS project life, will afterwards be trainers on the use of ICTs in their Regions, their schools and colleagues, after September 1998.

The strong demand for in-service training from the teachers was partly met by the operational model developed in the framework of TRENDS. The distance training model is relevant to the official national Education curricula. The model is also flexible enough to allow macro-, meso- and micro-contextualisation, embedding «monitoring» tools to cope with change. Henceforth, it is adaptable apart from the case of the secondary school teachers, also for the teachers of primary education as well as for the pre-service training of teachers in the universities.

In order to ensure the openness of the system to the other national TCs and their «clients» (teachers), thus contributing to an integrated service provision, links to other national TRENDS servers are available in the web-based training environment.

2. GREECE

ANALYSIS

The Training Centre is hosted by the Pedagogical Institute, in Athens, and the distance training delivery is being supported by its server machines.

The Ministry of Education, having full responsibility of the in-service teachers training, through-out the country, expressed its strong interest, from the very beginning of the project. This interest gradually changed to full support to the pilot phase by allowing for teachers' time allocated in the training process and extra time for the training and the follow-up work of the school-leaders.

Strong commitment by the Ministry to the adoption of the flexible, school-based training model that TRENDS is introducing, is still pending, waiting for the project's final results and the evaluation procedures.

The Pedagogical Institute is acting as the advisory body to the Ministry, as regards the in-service teachers training. Thus, the involvement of this organization in the development and the validation of the TRENDS model will prove to be very useful in terms of investgating further exploitation at national level.

PLANNING

Materials made available through the TRENDS Training Centre are especially arranged for individual use, according to the needs of teachers, dealing with various subjects. An idea still to be materialized includes the development of a database with exam-papers, properly collected and stored. This way all teachers are aware of what is going on in various schools even if they are based in isolated regions.

Through video-conference facility («virtual classroom» scenario), supported by the sw tools «Net-Meeting» and CUSeeMee, a number of other educational institutions can easily contribute to the training process, in the participating schools and their personnel. A communication thread between the Greek Ministry of Education and the servers in Pedagogical Institute is going to be established.

A complete guide on how to prepare a multimedia-based sequense on a specific subject, by collecting relevant educational materials, scattered around in the various web sites, is one of the training modules, available in the TC's server, as it was presented in the TRENDS European Workshop in Crete (September 1997).

Regarding the integrated use of the other two, non-real time communication ODL scenarios, the self-learning and the collaborative learning processes are integrated into the everyday practice, in the schools.

After this first contact with the various learning scenarios, during the period January-June 1998, there are going to be suggestions for new discussion fora of interest for teachers.

For the certification of their 6-month training (52h) the participants were asked to participate in collaborative projects, in teams of not more than three persons during the last month.

Every teacher connected to Training Center is entitled to submit questions, related to the educational process and the material of his/her discipline. A FAQ facility is being available to the school teachers. In case the teacher cannot have an answer through the FAQ, the questions is forwarded to an experts group – which is commissioned with the task to advise the school teachers for their everyday work - and get answered within a predefined time interval, via e-mail.

Teachers' training has always been provided under the auspices of the Greek Ministry of Education, but, until now, the training of teachers on the use of ICT is provided by the various Technical Universities, around the country. Now, with the establishment of the Training Center as a service provider, according the the specifications of TRENDS, accredited training on the use of ICT and related issues (tecahers' skills) will also be made available by the Pedagogical Institute, through the use of distance learning techniques. There are not any other public or private providers offering distance learnin, thus there would no competitor of the TRENDS TC for the time being.

IMPLEMENTATION

The hardware and software had been tested at the school level to ensure the necessary two-way communication between the the teachers and the TC.

After the fulfilment of the training course (Basics 12 hours, Virtual Classroom 6 hours, Self-learning 14 hours, Collaborative Learning 20 hours), that it also included scheduled visits in every school of the members of the staff of the Pedagogical Institute,

an additional package of supporting materials, regarding ways to improve tele-learning, information search, information exchange, document generation is under preparation.

In terms of technology, the Greek Training Center is already well organised and connected with the other national TRENDS Centres. Teachers are addressed as members of the educational system and they get their training through a 52h course, organised in the school.

It is important to mention that the head-teachers of these schools were also invited to participate in a one-day seminar, held in Pedagogical Institute, together with the school leaders in order to get accustomed with TRENDS' educational targets and provide later a better institutional support for their trainees.

As a general comment, the TRENDS Teachers Training model, properly adapted to to fit the local conditions, has proven to be a most welcome innovation in Greece. For the first time, in collaboration with their colleagues, from five other European countries, the Greek teachers had the opportunity to develop a training scheme designed in such a way to integrate their background knowledge, pace of learning, available time, etc.

A lot of important parameters have been taken into consideration, before reaching a final agreement at european level on an effective and, at the same time, common plan. In the Greek environment, conditions like low salaries, a relatively high average age of the teachers, the limited number of Internet users, the lack of multimedia-computers in the vast majotiy of the schools, corresponding to hindering factors for any type of innovation to be properly introduced and thoroughly validated.

Adapting the plans to the local conditions we have decided to provide as much material as possible without charging a penny to the teachers and at the same time requiring a lot of their time for self learning and collaborative learning. In the due time we invited even the Head-Masters of the first twenty schools of the TRENDS-Project and gave them a thorough information about. Their unanimous positive response confirmed our initiative.

The contextualization applied at macro-, meso-, micro-level has met various difficulties. At the same time various organisations and institutions has been obliged in order to follow the TRENDS-Project to accelerate the pace regarding the familiarisation of Greek teachers with New Technologies.

No other programs previously have addressed in Greece the same need as TRENDS did regarding the engagement of school teachers to new technologies, networked distance learning and Internet related information mining.

Regarding the existing, before-TRENDS experience on the use of multimedi and telematics of the teachers of the schools participating in the project, it was insignificant. The dominant attitude of the Greek teachers participating in the project is very positive, because they participate as volunteers and they understand that training in the new technologies in a few years time can be of importance regarding their ability to hold the interest of their pupils. The response of the head-teachers has also been absolutely positive and this can be of great help in the future. Thus, in most of the cases there were no problems regarding the formal and informal leadership within the schools.

The attitude of school-leaders towards the project, after the four face-to-face, one-day training sessions, is rather positive, except in some cases where technical problems were present. Especially the ISDN communication network seems to be still a rather new experience even for the staff of the telecom operator and cause a lot of problems.

For the rest of the project period and in collaboration with various educational institutions, a series of lectures is programmed, to be delivered on-line through the TRENDS Network. The lecturers will be experts in various pedagogical and other scholar and scientific fields and they will motivate a teleconferencing learning process with the participating teachers in their schools («virtual classroom»).

3. ITALY

ANALYSIS

TRENDS project faced subsequent changes in the political and technical leadership within the Ministry of Education during its life-span. Nevertheless, TRENDS has achieved growing institutional support from the Ministry.

This support was demonstrated by the recognition of the courses proposed to be offered by the Ministry, as well as by the meeting of school presidents, which was organised at the Ministry and by the presence of members of the Ministry's staff in the school-leaders seminars.

A key function in this direction was played by BDP, an institutional actor having a central role in the support of ICT in schools, both for documentation and teaching/learning.

PLANNING

Every effort has been put in implementing the core principle of integration of the three basic ODL scenarios, both in the school leaders' and in the rest of the teachers' training. The principle has been well accepted at both institutional and individual level, but the concrete implementation has encountered some difficulties, because of the lack of available self-study materials perfectly suitable for the pilot course and the delay in the installation of necessary equipment for tele-conferencing, in some of the twenty participating schools.

In concrete terms some learning programmes for module A (technology training, basic knowledge on ICT) has been produced by BDP, through adaptation of available materials in Italian, whilst a learning package for module B (the use of communication technology in school teaching and learning) has been developed by SCIENTER in collaboration with the other European partners, mainly by using relevant BECTa's (former NCET) and CIDEAD's materials, as common learning resources for the six partner countries.

The module B involves several activities that stimulate collaborative learning in the networks, while national fora have been activated on a disciplinary (subject) level and on some «horizontal» issues, more related to the use and didactics of new technologies in the school. A few tele-conferences are being planned, to be included in both SL's and teachers' training. All of these activities are conducted in Italian, while SLs and teachers who have sufficient knowledge of English are invited to take part in the transnational for a, activated by the different national training centres. A bridge between the national and the transnational fora is guaranteed by SCIENTER, through periodic synthesis in Italian of European debate and vice versa.

The integration of the three scenarios has followed these basic principles: mainly consolidated contents have been selected for self learning materials, controversial issues are discussed in thematic fora, expert input and recent case studies are presented

through videoconferences. Teachers' experience is utilised in all three scenarios but constitutes the very basis for the collaborative learning activities.

The training contents of the Italian «pilot» have been defined on the basis of the agreed set of objectives described in the Operations Manual and in the annex of the TRENDS Teachers Training Model (D.4.1). A modular approach has been followed to allow individualisation of training path, according to existing knowledge, but principle C.2 is only partially implemented, at the moment, due to the limited extension of the training programme provided. Both BDP and SCIENTER believe that the model, which was set up by TRENDS will be sufficient to carry out other training courses and, in any case, the significant effort done hitherto to set up the institutional framework and the network of people and technology, which is now the most important asset of the project, should be further justified.

Steps are being taken to present the first results of TRENDS to other Italian authorities and to complete the integration of project results into the mainstream national programme on ICT in the public schools environment. Among other things, the TRENDS training programme can constitute one of the transferable elements of the project, especially in the case where some formalisation of the TRENDS common content (Module B), as a standard requirement for the competence of teachers on use of ICT in learning, could be achieved, at the European level.

IMPLEMENTATION

The implementation of TRENDS in Italy is coherent with the principles adopted at european level, in spite of serious delays experienced in the installation of the server package, originated from the adaptation of the customised TRENDS sw in different operation systems. All functionalities have anyhow been activated and experienced at least by the SLs. The training of teachers is still taking place.

The activation of transnational fora for school leaders has been conducted in September 1997, in order to generate European value added. Unfortunately most the countries participating in TRENDS were late in implementing the relevant fora in their TC's servers and no substantial European interaction is taking place at the moment. The participation of the teachers in the discussion for a, as one of the main tasks for collaborative learning, taking place at transnational level, is still to be validated through the on-going training of the 2400 teachers.

4. PORTUGAL

ANALYSIS

The (virtual) Training Centre in Portugal is located in the University of Minho. TRENDS project in Portugal had a strong support from the Ministry of the Education, thus facilitating schools and teachers involvement. Also there is a defined national policy for «In-Service Teachers Training», which has been taken into account.

The accreditation of the TRENDS courses is considered as a key success factor and a strong motive for teachers participation, from the very beginning of the project.

The TRENDS project, as training potential, with its developed «good practice» for the use of ICT in teachers education, is being carefully followed by two other national initiatives that aim to integrate ICT and telematics in schools. One of them is the

«Internet In Schools» initiative, where teachers that were involved in the TRENDS training activities are also participating in school projects promoted by this initiatives.

PLANNING

In order to implement TRENDS Training Model, the Portuguese Teachers Association and the Ministry, together with the other University and telecom actors, have taken in consideration the deployment of the Network service provision and the installation of the necessary servers, to support distance teachers training.

In terms of physical sites, the TRENDS Network constitutes of 40 Secondary Schools and 2 Ministry of Education Offices, one Network Centre (server), in the CET premises and one Training Centre, at a Town Hall Building in Aveiro. This Network can be described as a large Intranet/Extranet, based on ISDN network technology, for switched point to point «bit transport» and TCP/IP, for data transport and provision of services and applications.

At operational level the Portuguese Training Centre is responsible to provide Help-Desk services to every actor involved in the training process (trainers, trainees, school leaders). It is also responsible to host and maintain the servers and the support materials of the training courses.

The approach to the training services is based on the installation of generic Internet servers that provide services embedded in webpages, in order to build an easy to use learning environment. This way every trainer and trainee can access to almost every basic service (e-mail, ftp, irc, discussion fora, etc.) through webpages. On the other hand, more skilled users may use the basic servers with standard clients.

Extra services were deployed in order to provide User management and registration, electronic evaluation enquiries, integrated publishing services and additional search facilities.

At this stage we have fully installed the following servers and are being used to support the TRENDS Training platform: WebServer, E-mail Server, UseNet News Server, IRC Sever, ListServer, FTP server, ILS Server and a Search engine server.

All the services have proven to be adequate tools to deliver training contents and to build the three learning scenarios, as foreseen in the TRENDS Training Model. The training courses structure is based on a common reference form, considering the pedagogical and didactic research using internet resources.

OBJECTIVES	METHODOLOGIES/ STRATEGIES	TOOLS	EXPECTED RESULTS
1. USE TRENDS NETWORK SERVICES (School Intranet/ Internet) in critical way	I On-line training material	I Browser	1. The use of ICT Tools in Classroom context.
2. To Promote the use of Network client tools	II Information search Information sharing	II Browser E-mail IRC NetMeeting	2. Evaluation of on-line Educational Resources to feed REMO (on line educational resources catalogue)
3. To Promote the search of information through ICT	III Achieve a common understanding about Distance Learning.	III HTML Editor	3. Performance in the Distance Education Learning.
4. To Arrange means to use new pedagogical methodologies in a way to transfer that for learning	IV On-line publication of trainees work reports		
5. Promote distance collaborative work			
6. Promote self-learning and long life learning			

* *Each course will be distance lectured by the Teacher training team; In presence support will be given to the trainees in the use of the ICT tools by the school leaders*

As a final TRENDS result and also a valuable result within every course, the trainees contribute for the construction of an On-Line System Research Multimedia (REMO) with pedagogical and didactic interest. This system will continuously select and classify informationprovided by the trainees, in the training courses and, after the validation of the trainers, it will be made available for every school. After the formal end of the TRENDS project, the evolution and maintenance of this system will be ensured by the Portuguese Ministry of the Education.

IMPLEMENTATION

There are 40 Portuguese schools participating in the TRENDS training pilot and the corresponding school-leaders, working 8 hours per week in work related to the delivery of the TRENDS courses. Additionally there are two teachers, with a mixed technical and pedagogical profile, allocated full time to the Training Centre operation, a Services maintenance and Help-desk.

Every school has its own Local Area Network (LAN), mostly deployed by the TRENDS technical staff, and is connected to the Network Centre through a Router. At the Network Centre, a Firewall equipment isolates the private part of TRENDS, from the public one, which can be freely accessible through the Internet. Internet access is done through a Frame Relay connection to Telepac, the largest Internet Service Provider in Portugal.

The TRENDS Training Centre is connected to the Network Centre through a high bandwidth connection, so that every school can access the pedagogical materials existing there.

In terms of international connections, all provisions were made for the integration of the Portuguese TRENDS Network into the European TRENDS Network, both through slow Internet connections and fast direct ISDN (nx64 Kbps) connections to other national Training Centres. This solution was found to be scaleable, secure and flexible,

while at the same time providing all the required functionality and performance for the TRENDS Project.

Portuguese TRENDS Website has proven to be a good learning tool, which is increasing the level of self-confidence and provide an effective way to share experiences among trainees.

TRENDS Website acts as a learning environment and is through its use that the learning process takes place. TRENDS registered teachers are encouraged to participate in activities and have access to several services:

1. e-mail account, personal working area, used to publish hypermedia materials are provided.
2. open discussions in TRENDS Webforum - Teachers are encouraged share their views with other teachers and to start new discussions related with ICT and Education.
3. TRENDS Website Catalogue - They can browse through TRENDS evaluated websites related with ICT and Education
4. TRENDS Courses *(see bellow)* - Teachers may register using an electronic form in a TRENDS course.
5. TRENDS HelpDesk and support materials - Personal help support materials are provided
6. School Projects, teachers may participate in running ICT distance school projects (there are two running projects at the moment).

All TRENDS courses have achieved official accreditation, thus allowing the Teachers attending those Courses with good final evaluation to acquire 2 credits to progress in their professional careers.

Throughout the courses *self-learning* and *collaborative-learning* are used as a method to accomplish the assignments proposed under each course framework. Each course has its requirements. In general the assignments and tasks involve Website evaluation, reports on specific subjects, problem solving and lesson plans design.

The trainees use each Course Webforum, E-mail, and Web-publishing facilities to develop activities that require group work and information sharing. They are also encouraged to use computers and the ICT resources to search and to browse throughout the Internet, however they can use other sources like videos, books, etc.

In presence support is also given by the School Leaders. They provide technical advice and discuss with the trainees the use of the right tools and strategies perform their tasks

The course registration or proposal is sent to the Training Centre by filling out an electronic form. The Teachers and School Leaders are notified by e-mail about the about the final Acceptance.

A course environment is a accessible only to Trainees and to Subject Teacher. Basically there are the following sub areas in this environment:

- Public messages/forum - where the trainers and the trainees debate subjects concerning the training process;
- Publishing - where the trainers and the trainees will publish course material and course assignments;

- Meeting room - where the trainers and the trainees can talk «live» about the subjects of the course;
- Utilities - where a set of tools are available for trainers and trainees to use, like the electronic logbooks, electronic enquiries to fill, webmail, or the help file.

As stated before, each trainee has access (using a web browser) to course materials (such as hypermedia documents) needed to study the subject. The trainee can read those materials on-line or he can print or save them to a later reading. He is also provided with all the tasks needed to follow the goals of each course. Of course, he can also give some feedback based on the materials analysis.

In a self-learning process he must search in the Internet for information related with each session theme and, after the information is compiled, he must produce his own page based on his work, as a way to share the information with his colleagues. The last step is to publish that page in the TRENDS server, below the course area. If the trainee needs to talk with the trainer he can do it using one of the following services:

- electronic mail - the trainee sends a private message to the trainer and waits for an answer to is doubts;
- the course forum - this forum is only reachable by the trainer and the trainees of the course and everyone registered can read and send it's contribution to the discussion;
- the meeting room - each course has is own irc channel, where trainer and trainees can talk about the work they are doing. The room is always open and is an excellent way to talk about the tasks that are being done.

There are cases where the trainer propose his trainees to develop collaborative work. Some of them can do that with a trainee from the same school, if there is someone. When they are distant from each other they can do that using any of the tools already described. They may want to schedule an hour to talk «live» in the irc channel, they can exchange points of view using each one e-mail account or even using the course forum and asking for the others trainees opinions. They can also establish private communication channels between them and with the trainer, if necessary.

5. SPAIN

ANALYSIS

The Training Centre in Spain is located in CIDEAD, in the Ministry of Education and Science, in Madrid. Spain has relatively speaking a tradition of distance training, organised and promoted by the Ministry of Education. There is also some experience in the development of multimedia materials in CIDEAD, but on the other hand there is the need for adaptation to the new information and communication technologies. In this respect TRENDS is an organised approach to this adaptation.

Individual needs are also being satisfied since the units taught deal with the use of ICT, thus providing spanish teachers with a type of training they lacked, in an modular way.

PLANNING

Integration of the three learning scenarios («virtual classroom», self-learning, collaborative learning): due to the technology infrastructure in most of the schools, the «virtual classroom» is the only scenario that has not been validated yet. The self-

learning scenarios were put into practice at the beginning of the school year, in October. Collaborative learning was initiated when the Training Centre's server became operational by the end of November. Details about the actions taken in each of the scenarios are explained in the part III.5.3 of this document.

Scenarios selection according to the objectives and learning contents. The learning contents concentrate on (a) using Internet tools, (b) becoming familiar with the use of a word processor and (c) taking advantage of the educational resources available in the Internet. They can all be developed, in different degrees, in the three learning scenarios.

Technology related with services rather than with scenarios: the technology used is based on Infovia, as explained in the WP4 Annex regarding the situation in Spain. Infovva can provide the services described in the Training Model.

Distribution of the four services (tele-training, information search, information exchange, document creation): The first three services are already being provided. The document generation service will be available during the month of February.

The tele-training service has been provided from the beginning of the school year, in October. The information search service is supported on the Internet training that has been provided to the teachers, which deals with information search in general. Besides, the software developed for the server allows information search from its Internet access module.

Similarly, the information exchange service -provided by e-mail-, the discussion fora, and the distribution lists are available through the Training Centre.

IMPLEMENTATION

During the initial phase, the school leaders took an Internet course they finished it by January 1998. Then, they attended a two-day meeting in Madrid, during the first week of February, to discuss the most relevant aspects of the following phase. The school leaders also evaluated the progress of their training during the initial phase (self-assessment as part of the project's evaluation framework). In the current stage, the schools leaders follow another optional course on Microsoft Word, which takes place at the same time as the training of the 400 teachers begins.

Most leaders have had experiences in distance training, which will be very useful for the second training phase. During the two-day training session, they learnt distance training methodology, embedding telematics, the teachers also became familiar with the way in which adults learn and, furthermore, how these aspects affect the teaching-learning process. The objectives that were set out for the two-day meeting can be summarised as follows:

- To analyse the theoretical framework of adults education from different approaches (psychological, sociological, educational).
- To value and be aware of the structural elements of distance education and to take initiatives that can improve it.
- To discover the methodological implications of distance training for ICT.
- To identify the school leader's functions in distance education and to understand tutorial support as a key element in this kind of training.
- To elaborate and develop personal problem solving strategies within tutoring.

- To appreciate the role of distance training in the field of permanent in-service education of teachers.
- To value distance training as an educational option, particularly useful in certain contexts.
- To seek information about the different aspects of distance training and to become interested in technological applications in this field.
- To show an active and participating behaviour, collaborating with other school leaders and schools.
- To favour co-operation among local participants, exchanging experiences and taking part in collaborative work.
- To understand the new opportunities available in an educational European network.
- To use the TRENDS network to improve their teaching resources and training with the contact of teachers in other countries.

The training of the school leaders is based on two courses: an Internet course and a Microsoft Word course. The training started with the Internet course, since the Word course will be delivered with the previously learnt Internet tools.

6. UNITED KINGDOM

ANALYSIS

TRENDS project in the UK addressed the training needs of groups of teachers in their individual schools.

It has become established practice in UK schools to develop short medium and long-term institutional development plans, called School Development Plans (SDPs).

The training strategies for the participating TRENDS teachers were closely related both to:

- teachers' professional needs;
- the teaching and learning needs of the schools and their pupils.

These critical areas were outlined in the SDPs of the schools participating in TRENDS.

PLANNING

The various scenarios («virtual classroom», supported self-learning and collaborative learning) were featured at various points in the teachers' training, in order to maximise their effectiveness.

For example, «expert led» learning started and provided the impetus for the teachers' instruction, whilst supported self study and reflection consolidated their learning. The teachers in the project expressed a strong desire for their training activities to be centred on their teaching subjects. (as opposed to training based on particular computer applications/ pieces of software).

Subject-based electronic conferences were set up, therefore, which stimulated the collaborative nature of the project. In these conferences teachers exchanged teaching ideas and discussed matters of pedagogical importance to them.

The TRENDS training model, in all its facets, was able to carry a significant amount of pedagogical material.

The course was modular in construction:

Module 1 was designed to build the teacher's technical skills to enable them to participate in

Module 2, which featured the pedagogical aspects of the course. The training material was related to the teachers' subject discipline.

The technology used supported different learning scenarios. The classes of services featured in the model were information search, information exchange and document generation.

IMPLEMENTATION

The TRENDS Teachers Training model, as it has been implemented in the UK, was specifically designed for training teachers, the course was delivered through and focused on the use of ICT and telematics in education.

Whilst certain institutions in the UK have made significant progress in the use of telematics to support the training of student teachers the UK does not have a significant history in using telematics to deliver training for teachers, who are already in the classroom. Current UK Government initiatives, however, have focused on creating a National Grid for Learning: «A mosaic of inter-connecting networks and education services based on the Internet.» (UK Government Consultation paper «Connecting the Learning Society, The National Grid for Learning»).

To complement this initiative there are also plans to train 450,000 teachers in the effective pedagogical use of ICTs. These initiatives will benefit considerably from the lessons of TRENDS as a most appropriate way of delivering this training.

We have presented the TRENDS model to those who have an interest in teacher training and highlighted out how it can be scaled up from a small experimental pilot to a national training strategy.

V. EVALUATION

TRENDS project has been evaluated through an evaluation framework, which was developed in the starting phases, based upon the user needs analysis' results.

On the basis of the implementation of the teachers training pilot in the six national environments, some conclusions have been reached related to the following four levels:

- *Reactions*: how the participants felt about the project.
- *Learning*: to what extent the participants increased knowledge, improved skills and changed attitudes.
- *Behaviour*: to what extent did their work behaviour change.
- *Results*: what final results occurred.

1. Reactions

In order to assess the overall reactions to the project the following material have been taken into account:

- The completed School-leaders' questionnaires (pre-training and post-training)
- The teachers questionnaires (pre-training and post-training) (not yet processed)
- Interviews with teachers, school leaders, headteachers
- Discussions in focus groups.

The overall reactions were positive in all participating countries. A big boost to the project was the meeting in Crete, for a «European Workshop», which gave a new perspective to the teachers participation and it was an opportunity for everybody to meet and exchange ideas. The initial reservations were lifted with the completion of the school leaders training. Also the main consideration was the necessary equipment for the training, which has proved to be a reason of great frustration and in some cases the main reason for complaints. A reaction that is worth mentioning is the fact that a great number of teachers felt that they could participate earlier in the project.

2. Learning

It has been proved, beyond doubt, a positive experiment for all participating countries, even for those that, by tradition, use open and distance learning for training purposes. The common approach with the use of the ***«Module B»*** of the TRENDS training resources «folder» (on the «Use of ICTs in teaching and learning») was very successful since it provides a common ground for all teachers and school leaders to start with. In some cases teachers were more familiar with the information technology (as in the Spanish and Portuguese environment) and in some other were less (in the Greek and Italian environment). This was only a minor drawback, since it was overcome by the enthusiasm of the communication with colleagues in other parts of the country and in other countries. It was generally felt that more training related to Module B could be beneficial.

The ***«Module A»*** was developed according to the needs of every Training Centre. As ana achievement of the TRENDS project, one could consider the fact that the attitudes of the teachers towards technology and the use of technology in the classroom has been transformed. Also the use of technology has positively influenced the administration procedures in schools and gave possibilities for further use within the schools and in collaboration with the students.

3. Behaviour

It is too soon for one to assess possible behavioural changes, since the impact of the trainingis not apparent. It is worth mentioning that in order to change behaviour the following are required:

- desire to change,
- necessary knowledge and skills and
- the right working climate, to promote change.

All of the above do not necessarily exist in every school, although significant effort is being made to build a positive attitude through the Network of the Training Centres. Behavioural change after training is a time-consuming process and in order to be evaluated the participation of all parties involved is necessary.

4. Results

Results are measured on a «before» and «after» basis. Also measurement at specific time intrvals is necessary. From the existing evidence (i.e. questionnaires etc.) it seems that the results are satisfactory enough to allow national priorities, in the form of exploitation plans, to take place. Those exploitation plans at national level are presented in the following chapter.

VII. EXPLOITATION PLANS

G. THE TRENDS PRODUCTS

The TRENDS project is reaching the final evaluation phase, whilst a number of concrete results are already available and can be considered as the TRENDS «products». In other words, these results constitute certain outcomes which could be of interest for the various stakeholders in the European educational communities, starting of course with the teachers and the TRENDS Training Centres.

The following are being considered the main outcomes of the TRENDS project that can consist the basis of the exploitation planning exercise. It is important to mention at this point that exploitation planning in the TRENDS project is expected to be completed by the end of the project work, with the preparation and submission of the originally scheduled «Exploitation Strategy». The main ingredients of the TRENDS exploitation strategy will correspond to the partners decisions regarding the sustainability of the TRENDS Network (as a training services provider in Europe), after the end of September 1998.

Following are some preliminary considerations for the potential of the TRENDS results, both at national and at the european scale.

- The ***TRENDS Training Model***, an ODL model, based on the use of multimedia network technologies over TCP/IP, to deliver in-service, school-based training to teachers. The TRENDS ODL model provides
  - ✓ a set of principles to be adopted for the development and delivery of distance, on-the-job training to school teachers, by using the Internet and
  - ✓ basic guidelines, in order to take into account national and regional aspects, like the institutional framework, the teachers background knowledge, etc.
- The ***TRENDS Training Course,*** including customised learning resources for the training on ***«the use of ICTs in teaching and learning»*** as well as
- he ***Operations Manual***, with a set of guidelines for the Training Centres, to succeed in the role of a distance training services provider.
- The ***TRENDS Training Centres*** and their Network of collaboration, a major asset of the project and its partners.

Other concrete results, to be investigated in terms of their exploitability:

- *The «Evaluation Framework»*, to be exploited in the framework of new ICT-related innovation programmes.
- *The «User Needs Analysis» of the training of secondary school teachers* on the use of ICTs in the school environment.
- *The Network of the Schools and the School Teachers*, from the six European countries, who participate in the validation phase and are willing to continue to work with the Training Centres, for further professional development and schools upgrade.

B. THE TRAINING CENTRES AS EDUCATION SERVICES PROVIDERS

As it has already been mentioned and accepted by the partrners and other external experts, a major achievement of the TRENDS project has to do with the establishment of the Distance Training units, the Training Centres. Each Centre is hosted in one public authority, in every country, and is considered a legitimate partner of the national public school communities, both for issues of curricula and learning materials and also for issues of teachers training.

The TRENDS Network can be thought of as a network of service providers, based in the six countries, to collaborate in a number of areas from the development of teachers training and students learning resources up to the building of a homogeneous teachers «on-the-job» training delivery platform. This platfom could gurantee a certain level of quality of the support provided to the european schools and the school teachers, starting with competences and skills to be developed by the teachers, the distance training courses (resources, programme, evaluation, accreditation), the ways of reaching the educational communities and stimulating interest.

In this general framework, the Training Centres were asked to think on the possibilities of further exploiting the afore-mentioned TRENDS results in their national «markets» (school communities, public education authorities). Their preliminary ideas are hereby presented to foster the need for a concertated exercise, in order to achieve a consensus for the broader aspects of European cooperation and coordination of efforts (operational disciplines, venture planning, synergies between the Training Centres' national priorities).

(a)The French Training Centre

✓ *Web sites evaluation database*

The database consisted of the evaluated web sites, to be used in a learning context, will be further updated and completed, at first by the teachers trained in the current TRENDS validation phase, under the coordination the 4 CRDPs, involved in the project (Rennes, Caen, Creteil, Antilles-Guyane). The responsible «pedagogical coordinators» will continue, after the end of the Telematics Programme project, to manage and facilitate this activity in each one of the four Regional Educational Authorities.

The database will be the main tool used by all the teachers who want to develop ICT-based activities with the pupils, in the schools. Free access to the TRENDS Server will be kept for all education actors.

✓ *Samples of didactic sequences using Internet tools*

TRENDS trainees are working to implement samples of didactic sequences, using Internet tools and, especially, the web sites, which are evaluated in the TRENDS database. The «samples» will be made available online and free for copy and use in the classrooms. This activity will be continued under the responsibility of the CRDPs in the future, as they are commissioned to support teachers and schools to develop their skills and competences on the use of the new Information and Communications Technologies.

✓ *Tutorials and educational publications*

The tutorial «Internet pour l'enseignant», currently online, will be updated and enhanced by the addition of handbooks, targeted to the various disciplines/subjects. Three publications are going to be edited shortly (*«Internet and Foreign Languages»*, *«Internet and Sciences»* and *«Internet and Geography»*).

✓ *Teachers Network*

The distribution list «CDIDOC-FR», moderated by CRDP de Bretagne, is currently operational and continuously increasing the number of participants (about 500 teachers and other educationalists, for the time being). The main questions discussed concern Internet-related activities in schools. The list seems to be a convenient way to develop the teachers network at a national level.

✓ *The National CNDP's network*

It will be possible and usefull, to involve, beyond the 4 CRDPs working actually in the TRENDS project, the whole french CNDP's network (28 Centers and about 120 local sites in France). This network has the same goal concerning the New Information and Communications Technology and will be supported by the resources developped in the TRENDS project. Moreover, the network will further elaborate all the above-mentioned learning (training) resources.

Based on both institutional and individual needs, the Governement of France has defined use of ICTs as an urgent priority for the months to come - specific budget for infrastructure and connections, plans to disseminate ICTs at schools and elsewhere. The Minister of Education and his executives, the "Recteurs", are in charge of the application of these priority plans in the Regional Educational Authorities.

(b)The Greek Training Centre

The Greek Centre will look for new target groups for the further exploitation of the TRENDS project, starting with embedding the TRENDS results in a number of ICT-related innovation programmes, involving the Ministry of Education, the Pedagogical Institute and the public schools.

Such target groups can be the communities of users in Primary Education (teachers and school authorities), the Teachers Training Centres, the Schools of Education in the Universities, etc.

One of the most promising and very closely related to TRENDS programmes is targeting at the expansion of the TRENDS Distance Education Centre in the Pedagogical Institute to support teachers training to an additional number of 40 public schools from all over Greece. The programme is scheduled to start in September 1998 and run for 2 years.

(c)The Italian Training Centre

The TRENDS project in Italy has been conducted by SCIENTER and Biblioteca di Documentazione Pedagogica with the increasing support of the Ministry of Education. Any future exploitation will have to take place in an institutional context and in view of how TRENDS can contribute and add value to the National Programme for Learning Technologies in the Italian schools.

After the end of the TAP TRENDS project, the coordination of the operations at country level will move from SCIENTER to BDP, acting as the agency of the Ministry

of Education, with a mandate to train school teachers on certain subjects related to ICTs. BDP has, through TRENDS, developed relevant experience on distance learning, which can be utilised in future phases of the training and support delivered from a distance to schools.

With the TRENDS server fully operational, it is foreseen to extend the provision of the TRENDS services both in duration (for the already involved 400 teachers and the ICT to support their teaching activities) and number of schools involved (by establishing a connection with other schools involved in the National Programme of the Ministry of Education).

The network of school-leaders, appointed for the TRENDS validation phase and trained in 1997/98, will continue to be utilised in future activities and will most probably be further trained in tutorial skills required for the improvement of their performance at the service of other teachers.

The materials developed (at national level for *Module A* and at european level for *Module B*) will be reviewed after their current pilot use and will then be made available to the new teachers involved, while, in agreement with European partners, the hypothesis of establishing a European certification of teacher's competence in the use of ICT for learning/teaching purpose will be investigated.

The funding of future TRENDS activities will be proposed through the recognition of TRENDS as a pilot project within the National Programme, while a stronger level of implementation of trans-national teachers activity will be sought in the future.

It is not foreseen to propose TRENDS services at a price for individual schools or teachers: the exploitation of TRENDS will stay within the original institutional environment and with the support of the relevant national authority. The present trans-national partnership may well continue, but further energy will be required to build convergence among national developments, not so much in terms of modelling and approaches (that are already very coherent), but rather in timing and concrete learning activities at trans-national level for teachers.

(d)The Portuguese Training Centre

The Portuguese Ministry of Education is accepting the results of the TRENDS project. Also the regional Teacher's Training Centres involved in the pilot training activities are extremely enthusiastic about this newly developed distance training model for teachers. Both entities are committed to further support the TRENDS initiative in Portugal and also to get more actively involved.

The DREC (The Centre Regional Directorate of the Ministry of the Education) is currently studying together with all the Portuguese TRENDS Consortium members, the adequate format to disseminate the results of the project at a national level and also to ensure that the effort put together for the pilot teachers training in the project will continue after the end of September 1998.

A Working Committee has been appointed with the following objectives:

- To find a techno-economical solution capable of ensuring the maintenance of the TRENDS Network and the Training Centre in an operational status, after the end of the project;
- To extend the Network of schools, created during the TRENDS project, to more and more schools every year;

- To extend this Network to involve the regional Teachers Training Centres, which actually ensure the continuous teachers training by the traditional means;
- To guarantee that new courses are created every year, based on distance learning models as developed in the TRENDS project and that these courses are financed and accredited and become part of the national continuous, in-service teachers training cycle.

(e)The Spanish Training Centre

Consolidation of the TRENDS training model in Secondary Schools. New leaders and teachers will be trained.

Pilot extension of the TRENDS training model to Primary Schools as well as to Secondary Schools students and Vocational School students.

Extension of the TRENDS training model for other Teacher Training purposes.

Use of the TRENDS Network for activities such as Netd@ys.

✓ ***Software and other materials***

The manuals will be revised and adapted to the new needs.

The server package will be revised and adapted to the new situations.

The courses will be revised and adapted to the new situations.

(f) The British Training Centre

The TRENDS results will be properly assessed, in order to be incorporated in the actions framework, concerning teachers training in the «National Grid for Learning» Initiative («Virtual Training Centre»).

IX. CONCLUDING REMARKS: TEACHERS IN EUROPE AND TRENDS EXPLOITATION STRATEGY

It is generally accepted that every Training Centre has its own priorities, according to the needs imposed by the institutional environment, in which it operates, but it is also obvious that all further exploitation ideas have some common characteristics:

- maintenance of the Training Centres from the point of view of technical requirements;
- management of the TC from the public organisations that were members of the TRENDS Consortium and which are related to the Ministries of Education;
- modification and adaptation to the local requirements of Module A (getting familiar with ICTs);
- expansion to the provision of services to other educational levels and target groups (primary, university);
- expansion to the provision of services to other geographical areas;
- accreditation of the training;
- no commercial exploitation is considered

Taking into account the positive reaction to TRENDS results and the commitment from the Ministries, TRENDS exploitation plans could be guided by the principle:

more users, more use, more usage

The public school teachers are facing an enormous challenge, to adapt their role in the school environment, to meet the consequenses originated from the effects that ICTs have on the way the people learn (didactics, pedagofies) and are organizing their work (school operations).

These teachers in Europe are usually less and less demanding in terms of professional skills development, have almost no motives for work apart their work with young people and they are usually asked to teach in establishment with significantly poor infrastructure.

Teachers in Europe are also sometimes affected by their involvement in pilot activities.....

Principles to build upon the TRENDS Exploitation Strategy:

- Integration of TRENDS «products» in the national programmes by the TCs.
- Establsihment of a European Network (Steering Committee...) to...
- Provide a minimum core set of services in a homogeneous way, to secondary schools
- Development of a venture plan for future common activities to address additional target group(s) at European level.

.....

This information will consist the base upon which a common business plan will be drawn at a later stage (D.9.3).

Discussion Paper

School Networks and Teachers Training

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The quality of education is strongly linked to training of teachers. For this reason, most European countries have developed policies for training and re-training school teachers. However, for a long time teachers' training was considered to be mainly a pre-service procedure, taking the form of initial training. This attitude seems to have changed in the last decades. Nowadays teachers are faced with emerging social needs and challenges and are called to respond to the new pedagogical, scientific and technological developments. The rapid evolution of new technologies in combination with the continuous societal/economic changes pose the need for on-going teachers' professionalisation and updating.

Under these circumstances, in-service training seems to be an effective training policy since it could increase transfer likelihood. In other words, the closer in time and circumstance the training is to the workplace, the more effective it seems to be. Teachers are called to solve pedagogical problems on the spot by drawing on their newly acquired skills and knowledge. In this way, practice is connected with theory and learning becomes more meaningful as it is 'built' in real conditions. In the beginning, in-service training used to be carried out in certain places (schools, training centres, institutes etc.), with a fixed timetable and the continuous physical presence of the trainer. This inflexible training model set limits to the range of training activities as well as teachers' participation in the courses offered.

As a result, new training models, based on distance education methodology, have been developed. On one hand, distance education increases instructional flexibility as to the learning method, pace, sequence, media and evaluation, helping, at the same time, people to overcome health/family circumstances and difficulties related to employment, time and travel costs. On the other hand, as Jenkins (1996) put it: 'Distance education interests educational planners largely because it can deliver more learning for less resource. (...) There is no doubt that its cost-effectiveness is a major asset'.

Hargreaves (Leach in Mills & Tait, 1996) and Moon (1996) have pointed out that teacher education rapidly becomes de-institutionalised and dispersed across a variety of schools and clusters. Furthermore, as Leach puts it: 'Open and distance teaching and learning has, over the last twenty-five years, offered an important routeway to professional development for many teachers across the world. (...) Its underlying methodology is ideally placed to facilitate a responsive and flexible model of teacher development, shifting the focus as it does from what institutions provide to how learners can be actively engaged in the process of their own learning through a wide variety of teaching and learning strategies'. (Leach in Mills &Tait, 1996)

For these reasons, the notion of networking in education has already been applied mainly in groups of schools, by activities in national and/or European pilot projects. However, the extent of existing governmental initiatives and other concerted actions differ widely within the European countries. At the same time, the pilot projects in the field have addressed the problem of high telecommunication costs as well as the related organisational shift in the educational establishments that is necessary to make the on-line educational services really useful for the school communities.

In any case, the technological advancement is giving the individual school the opportunity to have fast contact with other schools and institutions, thus providing strong motivation for communication and exchange of ideas and experiences. Today, there is a variety of resources available through the international data communication networks, such as directories, guides and lists. These resources could be exploited for supporting an educator's in-service training model, with trans-European features and with the potential to overcome difficulties originating from the insufficient time in the school schedule, the cost of network access and use, the lack of administrative support, etc.

The establishment of school networks to support the provision of educational services (distance learning activities, access to educational material / information repositories, school-based training of teachers etc.) may be the basis for future collaboration between the European countries. Co-operation should be aimed to transfer knowledge and expertise in order to enhance the operation of the education systems in the region. Mature network technologies and multimedia systems will allow educational organisations, cultural institutions and research centres to provide education and training services to the educational communities.

Existing projects and initiatives at national, regional and local level aimed to promote school networking and co-operation between the educational communities and the technology providers, may contribute substantially to a bottom-up development of educational networks and advance the scope of their activities at the European level.

In this context, we suggest that the discussion in this workshop focus on the following crucial issues:

- ***Distance learning models***
- ***School-networks: network facilities, access to Internet.***
- ***Organisational shift***
- ***Content: Training material, language and cultural barriers.***

in an attempt to identify the emerging needs, difficulties and synergies in the development of school networks and distance training services aiming at teachers' continuous professionalisation and, at the same time, suggest policies and methods for their promotion, exploitation and integration.

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NEWSLETTER

TELEMATICS TIMES FOR TEACHERS

Teacher Training Projects in DG XIII Telematics Programme

The Newsletter for Telematics Applications - T3, TRENDS and REM

Issue No. 1 April 1996

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Contributions for Issue 2 to be sent to REM at t.m.owen@bangor.ac.uk Deadline: June 1996

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Introducing the Telematics Times for Teachers

As a result of the first call for Proposals for the European Commission's Telematics Applications Programme in December 1994, 31 projects have been funded by the Education and Training Sector and the Telematics Applications Programme Support Actions representing a total EU contribution of over 47 million ECU.

Almost all of the 31 projects began on 1 January 1996. Three focus on the training of teachers:

- **Telematics for Teacher Training (T3)**
- **Reseau d'Enseignment Multimedia (REM).**
- **Training Educators through Networks Distributed Systems (TRENDS)**

Telematics for Teacher Training (T3) is a project supported by the European Union from 1996-1998. Seven Teacher Training Organisations including universities from seven European countries together with their sponsoring partners form the consortium.

Courses for teachers of **Mathematics, Languages, Science and Technology** plus **Teacher Trainers** and **Library Staff** will be developed across seven European countries.

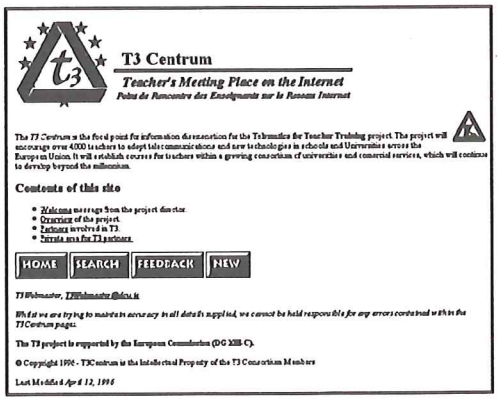
The Internet will be used as a place for topical information and dialogue, within and across countries, providing a support service through a central WWW Site - **T3Centrum**. The project will also produce an analysis of the needs of teachers for multimedia communications in Europe, using ISDN enhanced videoconferencing. Through T3 Telematics will be used to grow communities of lifelong learners: *student teachers, practising teachers and teacher educators.*

The T3Centrum

Tony Hevey, Dublin City University

The T3Centrum has created a virtual meeting place on the Internet for educators interested in teacher training or Telematics in education. The T3Centrum is a set of web servers based in each T3 partners home site. The T3 home page is:

http://t3.dcu.ie/t3.html



The private members area on the home page provides links to access the Style Guide, an image toolbox containing all the buttons and icons T3 designers should use, and the page template for all pages contained on any T3 sites. The key to consistency on the web is the page template. Every page on our sites will have the same logo, the same background, the same colouring of links, the same buttons for home, search, feedback and new, and finally the same footer. The footer consists of the address of the person who maintains the page, a copyright statement, a disclaimer and a modification date. Feel free to use the feedback button on our pages to let us know what you think.

TRENDS: **http://www.lrf.gr/trends (available from June 1996)**

TRaining Educators through Networks and Distributed Systems (TRENDS)

Sandra Crapper, UK Coordinator - TRENDS Project, NCET,

".... one of the most powerful ways of encouraging teachers to use IT in the classroom is to provide experiences where teachers use IT in order to take their own development forward."
(Anthea Millett, UK Teacher Training Agency, 1996)

It is to provide such experience for a number of UK secondary teachers that the National Council for Educational Technology (NCET) became the UK Coordinator of the European funded project, TRENDS. With our associate partner ICL, the project will investigate the value of using Telematics for the delivery of information to facilitate and encourage the professional development of a network of European teachers.

TRENDS aims to develop teachers' knowledge of how IT can change and enhance the learning process and increase their effectiveness in the classroom. Over 2,400 secondary school teachers across six member states will gain experience of using a wide range of Telematics tools and be offered the opportunity to develop new skills. It is envisaged that by raising the teachers' awareness and understanding of the technologies, they will then be able to exploit them in the educational environment.

The countries involved are: France, Greece, Italy, Portugal, Spain and the UK. Led by Dr Nikitas Kastis, of the Lambrakis Research Foundation, Athens, the TRENDS Consortium comprises eighteen organisations including: the Pedagogigal Institute, Greece; BDP, Italy; CNDP, France; CIDEAD, Spain, CFAECA, Portugal; national telecom providers, European IT companies, with an additional link to the Media Unit of Danish Broadcasting. TRENDS also has the official support of the Ministries of Education in the countries involved.

NCET is ideally placed to build on past projects related to teacher education, which have included the identification of teacher competencies expanding on this to provide teachers with new opportunities.

A User Needs Analysis is currently underway, and the results of this will be used to identify the activities and resources which will best meet the current IT professional development needs of secondary teachers.

NCET will provide a TRENDS information base on the NCET R&D server, which will aim to support the teachers during the lifetime of the project and beyond. There will be links to other sites, and it is envisaged that a particularly close working relationship will be developed with two other European projects currently funded from the same European programme, T3 and REM. Widening the scope of TRENDS to build these links should enable the project to bring a breadth of activity which will prove of interest to the teachers.

NCET will be able to link the TRENDS project to some of the other UK activities the organisation is currently involved with such as the Education Departments' Superhighway Initiative (EDSI), and the Teachers' IT Expertise Initiative. The TRENDS project will also keep up-to-date with the current initiatives of the UK Teacher Training Agency and will share the outcomes relating to Continuing Professional Development with our European partners.

It is early days for the TRENDS project which began in January 1996, and finishes on 30th June 1988. If you are interested in receiving updates on TRENDS activities, please contact the writer direct.

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REFLECT Promoting reflective thinking in Initial Teacher Education

John McShea, Researcher, University of Exeter

REFLECT - PROJECT

In order to learn effectively from school experiences, student teachers need to engage in procedures for reflection which relate theoretical frameworks for teaching and learning to their role as practitioners in the classroom.

The University of Exeter is involved in a joint European TSER project, **REFLECT**, with universities in Utrecht (lead), Barcelona and Trondheim to study the influence of telematics on the development of student teachers' professional competence. Exeter PGCE students on school-based experience have been communicating with their university tutors using a videoconferencing facility which offers an audio and visual link for participants, together with the shared use of the computer software. The potential of telematics to stimulate reflective skill needs to be investigated in depth. In addition, engagement in action research is intended to inform the understanding of such technology in teacher education.

REFLECT WWW http://www.ex.ac.uk/telematics/Reflect/reflect.htm

REM: **http://weblife.bangor.ac.uk/rem/rem.html**

Reseau d'Enseignment Multimedia (REM) is a 2 year project which began on 1 January 1996 aims to provide a telematic system for collaborative teaching and learning across Europe, in particular allowing teachers and students to work together to study and develop their teaching about Europe using a range of networks and multimedia resources.

The REM project aims to provide opportunities modelled on the ERASMUS and COMENIUS programmes, giving students and teachers the chance to gain experience from wider contact with their European counterparts.

The REM Launch Conference.

Dai Griffiths, Universitat de les Illes Balears

The REM Launch Conference was held in the University of the Balearic Islands on the 2nd, 3rd and 4th of February 1996.

The aims of the conference were established at a meeting of the lead partners in early January: "At the end of the conference we should all have a shared vision for REM: how the system will work, what learning resources will be on it, what courses and which student groups will use it in each location, and what model of learning will be implicitly promoted by REM. We will also know what resources are available to each partner, both in terms of people, money and equipment; and the responsibilities of each participant."

The management team had noticed that their conception of the project had become clarified as a result of repeatedly explaining their ideas to different people. It was decided that it would be useful for the other partners to go through a similar iterative process in the launch conference.

Three topics for discussion were chosen for the iterative discussions:

- REM pedagogy
- REM multi-media learning resources
- REM technology.

The discussions were held in three phases: Brainstorm, Focusing and Conclusions.

Membership of three groups enabled each participant to work directly with half of the delegates to the conference but in addition ensured that one or another of the members of each discussion group had been in another group with every delegate. The small size of the groups made it possible for everyone to make a contribution. At the end of the second iteration of the Conclusion phase there was a consensus that the goals of the small group discussions had been achieved, and the conference moved on to a plenary discussion.

The two remaining half days consisted of plenary briefings on the finances and organisation of REM, discussions in curriculum groups, discussions in geographical groups (which permitted discussions in languages other than English), and small group workshops on the technology which will form the starting point for REM.

I think I can safely say that by the end of the conference all the participants felt that they were members of a supportive group, and that the debates which we had started could now be successfully continued by electronic means. This was at least in part due to the rich interactions created by the dynamic structure of the iterative discussions. All participants now have accounts on a First Class conferencing system and this constitutes the forum for a continuing debate.

The briefings for the iterative discussions and the flip charts created at the conference are available on the Web at http://ds5200.uib.es:80/depart/dceweb. Of much more significance, and much more difficult to document or quantify, was the shared understanding created by joint exploration of the issues. This should provide a solid basis for further debate planning and collaboration.

And finally, in case you were wondering, the weather was fine, the food was great, and we all had a real good time!

BT *Working Together* **BEON** ICL

Bristol Education On Line Network

Announced as a "*joint trial of a world leading interactive on-line education system in Bristol*" the Bristol On-line Educational Network project (BEON) was launched by ICL and BT in collaboration with the School of Education at the University of Exeter.

In January of this year trials began with eleven schools in the Withywood area of southern Bristol.

More than 100 teaching staff and 2,000 pupils in both primary and secondary school are involved. The aim of the trial is to see how an educational on-line network can work in practise and be used beneficially by teachers and pupils.

The School of Education at the University of Exeter is providing: telematics in-service training; leading educational exploration and educating the companies about the educational market of remote teaching support via BT Desktop Enhanced Videoconferencing and helping to assess the educational benefits that arise. BEON is a national UK project within T3.

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Maureen Vallely +44 171 250 9178

First Telematics Concertation Meeting - Brussels 18/19th March 1996

Hedda McShea, T3 Assistant Coordinator,
University of Exeter

T3 were well represented, with our project Coordinator Niki Davis and myself from Exeter. Kati Isonikkilä came from Oulu, Wim Veen from Utrecht and Ana Alice Bapista and Carlos Sansa Pinto represented Minho.

As we might expect from a "First" meeting, the introductions to the Education and Training sector projects were high on the agenda. With over 30 projects, the allocated time during the morning was very limited, and we all made good use of breaks throughout the rest of the conference to gain further information and to initiate additional contacts across projects. A buffet lunch was provided at the meeting and small working and discussion groups set up spontaneously in adjacent rooms.

After another inspection of information materials, I discovered Martin Owen and Oleg Liber from REM, with Nikitas Kastis from TRENDS and Niki Davis already deep into details of collaboration, including plans for this newsletter. The afternoon of the first day was given to the complex topic of cost statements. We received further documentation to assist with the interpretation of the Commission requirements.

On the second day, Niki Davis chaired the Working Group on Tertiary Education and Teacher Training, while I was able to take part in workshops on documentation requirements and guidelines, project house style and usability criteria for deliverables. The information I received will provide a useful discussion basis for our partners within the T3 Consortium. On this second day, every free minute served for further discussions between partners within and across projects.

T3 Inaugural Meeting at Exeter

Representatives from all seven partner countries attended the three day inaugural meeting which was held at Exeter in January. Discussions took place setting out the aims of the project with work package leaders giving a short presentations.

The meeting included a telematics technical workshop with a demonstration of enhanced videoconferencing through ISDN. First Class Conferencing, the SCET CD-ROM of the WWW as well as the partners' web sites were also demonstrated.

On the second day, the meeting split into groups to consider different work packages more closely, followed by a 'report-back' session. The meeting concluded on the Saturday after a morning summary session.

In the next issue of Telematics Times for Teachers .....

Find out more about the EuroTurtles and what they have to do with teacher training!

Forthcoming Events in T3

Flexible and Distance Learning Materials Workshop

A workshop will take place in Oulu, Finland in late May (22-25) to discuss and contribute to the planning of Workpackage 5 - Flexible and Distance Learning Materials. *A report from this workshop will be featured in Issue 2 of 'Telematics Times for Teachers'.*

Course Development

The development of courses will gain pace during the next few months. Courses for Mathematics and Science teachers have started. *We shall report on the progress of these in the next issue of 'Telematics Times for Teachers'.*

T3Centrum

There are plans to develop collaborative activities for consortium members using the T3Centrum.

The Web at Exeter

The Subject Discussion Forums will be running as and when details are forthcoming. It is hoped that this will be by the end of May. Plans are also afoot to develop Virtual Laboratories, similar to those at Oulu.

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Telematics *for* Teacher Training

Telematics for Teacher Training is a Project supported by the European Union from 1996 - 1998. Seven Teacher Training Organisations including universities from seven European countries together with their sponsoring partners form the consortium.

Telematics for Teacher Training will enhance the quality of education and training for teaching by encouraging the initial and ongoing professional development of educators through the targeted use of modern communications. It will achieve this in a number of ways.

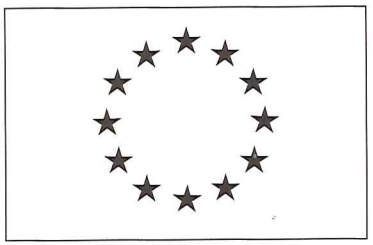
Telematics for Teacher Training

Courses for teachers of:

MATHEMATICS
SCIENCE
LANGUAGES
TECHNOLOGY

plus

TEACHER TRAINERS AND LIBRARY STAFF



Support services:

WWW: T3CENTRUM
MATERIALS

Needs analysis for EU:

LIBRARY STAFF SUPPORT
MULTIMEDIA COMMUNICATIONS

Telematics will be used to grow communities of lifelong learners: student teachers, practising teachers, teacher educators

1 Develop an international teaching team who model best practice with telematics for teachers in Mathematics, Languages, Science and Technology across seven countries.

2 Design courses for teacher educators in the effective use of telematics as a medium for study and dialogue in the professional development of student teachers and practising teachers in primary and secondary schools.

3 Provide guidelines and courses for library staff in their support of teachers to adopt telematics for teaching and professional development.

4 Open up the Internet as a place to meet users and find relevant information, within and across countries, through a central WWW Site - **T3Centrum http://t3.dcu.ie/t3.html**

5 Produce an analysis of the needs of teachers for multimedia communications in Europe, using ISDN enhanced videoconferencing.

6 Develop a European Core Curriculum Course in Telematics for teachers to maximise the benefit of the new technologies for this distributed work force.

7 Validate and disseminate work across Europe through professional associations and policy makers.

8 Develop teaching services with telematics for education and training.

Sponsoring Partners of the T3 Consortium include:

British Telecommunications plc
UK

International Computers Limited
UK

Olivetti
Italy, The Netherlands, UK

Open University
UK

Parque Nacional da Peneda-Gerês
Portugal

Portugal Telecom SA - Centro de Estudos de Telecomunicações
Portugal

Ptt Telecom District Utrecht
The Netherlands

Scottish Council for Educational Technology
UK

Telecom Eireann
Ireland

Telecom Finland
Finland

Videra Oy
Finland

WWW address
T3Centrum
http://t3.dcu.ie/t3.html

The virtual meeting place for teacher training in Europe

Academic Partners

University of Exeter (Lead)
Professor Niki Davis - UK

Dublin City University
Dr Peter McKenna - Ireland

IUFM Grenoble
Professor Bernard Cornu - France

Istituto Tecnologie Didattiche
Professor Giorgio Olimpo - Italy

Universidade do Minho
Professor Altamiro Machado - Portugal

University of Oulu
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Telematics *for* Teacher Training

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A Study of Teachers' In-service Training Using Distance Education in EU Member States

LAMBRAKIS RESEARCH FOUNDATION

August 1997

A Study of Teachers' In-service Training Using Distance Education in EU Member States

Author: Chryssa Koutra
Reviewed by George Tsakarissianos

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1. Introduction

The quality of education is strongly linked to training of teachers. For this reason, most EU countries have developed policies for training and re-training school teachers. However, for a long time teachers' training was considered to be mainly a pre-service procedure, taking the form of initial training. This attitude seems to have changed in the last decades. Nowadays teachers are faced with emerging social needs and challenges and are called to respond to the new pedagogical, scientific and technological developments. The rapid evolution of new technologies in combination with the continuous societal/economic changes pose the need for on-going teachers' professionalisation and updating. In this context, teachers have the right and duty to be trained and re-trained according to their own as well as their students' needs. Training can take place during teachers' normal working hours or be stimulated by an increase in their salary, a promotion, etc. Nevertheless, motivating and stimulating strategies vary from country to country. (TRENDS, Training Model, February 1997)

In-service training has proved to be an effective training policy since it increases transfer likelihood. In other words, the closer in time and circumstance the training is to the workplace, the more effective it proves to be. Teachers are called to solve pedagogical problems on the spot by drawing on their newly acquired skills and knowledge. In this way, practice is connected with theory and learning becomes more meaningful as it is 'built' in real conditions.

In the beginning, in-service training used to be carried out in certain places (schools, training centres, institutes etc.), with a fixed timetable and the continuous physical presence of the trainer. This inflexible training model set limits to the range of training activities as well as teachers' participation in the courses offered. For these reasons, new training models, based on distance education methodology, have been developed. On the one hand, distance education increases instructional flexibility as to the learning method, pace, sequence, media and method/timing of evaluation. In general, for more than 100 years distance education has helped people - particularly adults - to overcome health/family circumstances and difficulties related to employment, time and travel costs. On the other hand, as Jenkins (1996) put it: 'Distance education interests educational planners largely because it can deliver more learning for less resource. It can open the doors to mass access to education and training. In doing so, it benefits from economies of scale, with costs per student decreasing as numbers rise. There is no doubt that its cost-effectiveness is a major asset'.

Hargreaves (Leach in Mills & Tait, 1996) has pointed out that teacher education rapidly becomes de-institutionalised and dispersed across a variety of schools and clusters. Moon suggests that the rationale for this shift of focus has varied from system to system and within both national and regional systems diverse models exist. Furthermore, as Leach puts it: 'Open and distance teaching and learning has, over the last twenty-five years, offered an important routeway to professional development for many teachers across the world. (...) Its underlying methodology is ideally placed to facilitate a responsive and flexible model of teacher development, shifting the focus as it does from what institutions provide to how learners can be actively engaged in the process of their own learning through a wide variety of teaching and learning strategies'. (Leach in Mills &Tait, 1996)

In this context, the revolution taking place in technological communication opens up new opportunities for accessing information and ideas and, also, provides tools for connecting individuals and/or institutions. Apart from the virtual reconstruction of the traditional classroom environment, new information and communication technology promotes collaborative learning and makes the learner/trainee feel less isolated. The virtual classroom, the virtual library/laboratory and the virtual community gradually change the very nature of distance education, with significant implications for teachers' in-service training.

The present study aims at shedding light on teachers' in-service training using distance education in EU member states, emphasising the current practices, trends and perspectives.

2. Distance education programmes used or under preparation for teachers' in-service training in EU countries

2.1. The European context for teachers' in-service training using distance education: EU programmes and projects.

Teachers' in-service training is promoted by the European Union policies for life-long learning. It should be noted that over 1995 and 1996 some 120 European in-service training transnational projects have been funded by the Commission in agreement with the member states. These projects now offer some 150 European in-service training courses with a total of 2.500 places available for teachers and other members of the educational staff. (Beernaert, 1997)

Special emphasis is placed on teachers' in-service training in *SOCRATES Programme*, School Education (Comenius), Action 3. As it is clearly stated in the SOCRATES Guidelines for Applicants 1997:

> *This Action contributes towards the achievement of the objectives of the SOCRATES programme by supporting European in-service training projects developed by institutions and organisations engaged in updating and improving the skills of all those whose work contributes to making the school a high-quality, inclusive and supportive learning environment. Such projects are designed to:*
>
> - *strengthen the European dimension in the in-service training of teachers and other educational staff;*
> - *promote co-operation between institutions and organisations engaged in updating and improving the skills of educational staff;*
> - *encourage the participation of educational staff in transnational in-service training;*
> - *encourage the use of open and distance learning and new information and communication technologies in the context of this Action.*

Evidently, it is expected that open and distance learning methods, supported by new information and communication technology, will play a key-role in transnational in-service training. The focus is gradually shifted from educational visits and exchanges to networking of institutions and individuals. In other words, it could be argued that a European teachers' virtual community is under development.

More precisely, in SOCRATES Programme (Horizontal Measures, Action 2) open and distance learning is defined as the context for educational co-operation in Europe. This definition applies as well to transnational teachers' in-service training, as it is implied above:

> *The development of ODL is a key-factor enabling citizens of the European Union to take advantage of an open area for educational co-operation in Europe. However, experience in ODL at a European level is still too fragmentary to offer real economies of scale. To offset this fragmentation, the specific ODL Action within SOCRATES aims to create tangible added value at Community level by increasing*

co-operation between the networks of people involved. In the framework of SOCRATES the concept of Open and Distance Learning is to be understood in a double sense, referring to:

- *the introduction of new modes of 'open' learning through all available delivery mechanisms, notably multimedia products and services, in all places where some form of education may occur;*
- *the provision of 'distance' learning services.*

The measures contained in SOCRATES for promoting ODL, including the use of information and communication technologies in conventional education, are oriented in particular towards:

- *developing pedagogical frameworks appropriate to the environment in which learning is taking place;*
- *improving the quality of the organisational environment in which these modes of education take place, and in particular the quality and user-friendliness of pedagogical materials and on-line services;*
- *enhancing the skills of teachers, trainers and managers in the use of innovative methods and techniques;*
- *encouraging the recognition of qualifications obtained through ODL.*

(European Commission, DG XXII - Education, Training and Youth, SOCRATES, Guidelines for Applicants 1997, July 1996, pp 49, 53, 66)

The *Telematics Applications RTD&D Programme* (1994-1998) sponsors three innovative projects focused on in-service teacher training via telematics. This EU programme is sub-divided into four major fields and 12 sectors. One of these sectors is concerned with Education and Training. The Telematics Applications for Education and Training is developing cost-effective applications that allow people to learn what, where, when and how they want. In this context, the projects T3, REM and TRENDS aim at developing flexible distance training services for the in-service training of teachers in several EU countries. Below each project is briefly described. (European Commission, DG XIII, Telematics Applications Programme, Guide to the 1995-1996 Telematics Projects, December 1996, pp 142, 155, 485)

T3: Telematics for Teacher Training. Project duration: 36 months. Major validation sites: Exeter University (UK), Dublin City University (IE), IUFM Grenoble (FR), Utrecht University (NL), Minho University (PT), Oulou University (FI), Parque Nacional de Peneda-Geres (PT), Portugal Telecom S.A. (PT), Zynet (UK), Open University (UK).

The Telematics for Teacher Training project will encourage over 4.000 teachers to adopt telecommunications and new technologies in schools and universities across the European Union. It will establish courses for teachers within a growing consortium of universities and commercial services, which will continue to develop beyond the millennium. Universities in Finland, France, Ireland, Italy, the Netherlands, Portugal and the UK form the consortium with support from partners which include

telecommunication companies. These universities across Europe will design and develop courses for both staff and students.

Primary and secondary teacher trainers and library staff will develop new practices together enhancing the quality of learning and knowledge of Europe within the curriculum. Best practice will be refined for teachers of mathematics, languages, science and technology in several European languages and many cultures. T3 will focus on supporting the new approach to education and training within the European Union: lifelong learning. Teachers will model this practice in front of their students. Teachers' skills in both telematics applications and in tutoring students how to learn for themselves will be available, even in remote rural areas, with the use of new technologies.

Other courses will use telematics naturally within their delivery, such as in school based teacher training and in the tutoring of teachers studying for a Masters of Education. The project will also refine a European core curriculum in Telematics for teacher trainers and provide guidelines for library staff in their support of teachers. These will be validated with European professional associations and education ministries. Commercial partners and ministries will use the experience to develop policies, services and marketing strategies appropriate to education.
(See: http://www2.echo.lu/telematics/education/en/projects/files/t3.html)

On the whole, T3 services cover the four main aspects of teacher education:

- Initial teacher training services - supervision, access to courses and libraries.
- Higher degree supervision and support for teachers undertaking MEd and PhD degrees.
- Continuing Professional Development - short courses for teachers in service.
- Curriculum and resource development services.

Existing applications will be used, such as Internet E-mail and World Wide Web. Broader band point to point applications will use desk top videoconferencing through ISDN. Flexible learning materials, an Internet site (T3Centrum) and international team teaching which models best practice will become part of courses. The 'T3Centrum' will provide a meeting place for teachers on the Internet. There they will find resources, information and opportunities for team teaching and collaborative development across Europe. These telematics may be viewed like 'an interconnecting door' between universities and partner schools. A shared magic space which allows students to drop into higher education despite their physical location or to move across countries and between universities. Video conferencing enables short intensive sessions between the expert teacher educator and the adults, who are often located in their classroom. The live connection enables reflective conversations focused on multimedia and evidence brought by either party. The WWW permits students, teachers and expert staff to read and share books, documents and experiences. The T3 project is also starting to provide laboratories on-line for technology and science education. (Davis, 1997).

A recent evaluation, sponsored by the UK government, showed that the services were received with enthusiasm by the teachers who found that they could control the pace and direction of their learning more successfully than with traditional in-service courses. (Still & Sharp, 1997).

REM: Reseaud d' Enseignement Multimedia. Project duration: 24 months. Major validation sites: University of Wales Bangor (UK), Barcelona (ES), Joensuu (FI), Nottingham Trent University (UK), Odense Seminarium (DK), University of Gothenberg (SE), Northern College (UK), Dublin Institute of Technology (IE), ESEI Maria Ulrich (PT), University of Balearic Islands (ES), University of Patras (GR).

The project will aim to provide opportunities modelled on EU programmes ERASMUS and COMENIUS which give students and teachers opportunities to gain experience from wider contact with their European counterparts. Through telematic technology they will have a much wider access to European collaborative teaching and learning. The system will allow students to study in their homes or schools as well as in IHE's. For trial purposes the project will develop the system for teachers in training, teacher in-service courses and the professional development of nursery staff. It will be tested on 986 students and teachers in at least 9 EU member states.

To facilitate these activities it will:

- create and maintain a distributed database of multimedia learning/training materials;
- develop technological tools which to sustain the depositing, organising and retrieval of the material in the database and its conversion into course material;
- develop tools which will register and track learner progress;
- seamlessly integrate these tools into a telematic learning environment across Internet and local networks using text, graphic and video communication and video telephony;
- develop training, guidance and marketing material for practitioners and their employing organisations;
- develop plans to sustain and disseminate this activity.

Internet, Janet, WWW, computer conference systems, MOO, object oriented databases, modems and local area networks, videophones will be used. The aim is to be inclusive for learners with different levels of network access, to be capable of exploiting advanced networks as well as those needing modem dialup and CD-ROM.
(See: http://www2.echo.lu/telematics/education/en/projects/files/rem.html)

More precisely, the REM model service proposes a number of workrooms which would form a Virtual Continuing Professional Development Centre. The individual REM workspace fits within a service structure which draws on the functions of tools (communication tools, learning management tools and the means of interacting with the multimedia database). The workspaces provide seminars, tutorials and workshops and various other forms of telematic based learning. REM makes a model of a building to facilitate explanation. A REM workspace is essentially a suite of software functions modelled as a room in which the facilities of communication, learning management and resource access are made available. These rooms would be arranged on five floors. The ground floor is publicly accessible space. It is essentially a WWW site which will feature: an overview kiosk, brochures and prospectus, current news, a greeting space (somewhere to log in and join), frequently asked questions. There are also some publicly available conferences which will allow anybody to participate and contribute to some on-going moderated activity. These would act as promotional activity for the Centre's work.

The first floor is an area for intensive, focused specified activities. This may not necessarily be about gaining specific qualifications but concern either curriculum collaboration about specific areas of cross European interest or around a specific teacher development need. These activities are variable in duration and under appropriate circumstance can act as accreditable prior learning in longer, award bearing, learning activities.

The second floor is for longer intensive award bearing activities in which teachers sustain collaboration for a longer period with a negotiated assessment target to reach, which leads to a professional development qualification (depending on level and member state). On this floor there is more tutor supervision, however, the REM pedagogic model demands that there is a structured mix of modelling a rich understanding of the domain being studied, a development of empirical action and deep reflection on that activity. This is the tradition of action research, and constructivist models of cognitive apprenticeship.

The third floor area allows for a mix of informal to semi-formal interaction. Firstly, there is a teachers lounge, where there are more or less open forums available (and new ones requestable) for general discussion amongst the teachers in the virtual centre. These include a range for self help groups, evaluative feedback areas on the use of the college, discussions on areas of topical interest or social interaction. The second part of the third floor is for teacher managed REM workspaces for groups of teachers who want collaborative spaces for their own purposes. These may be for Comenius partnerships which want to endure beyond the administered activities on the first and second floor.

The fourth floor is for college management. This area provides REM workspaces for activity amongst the REM partner institutions providing the REM service to: monitor the activities of lower floors, plan future activities as a result of monitoring and evaluation, monitor the resource base, develop further strategies for development, conduct evaluation activities. (Owen, 1997).

TRENDS: TRaining Educators Through Networks and Distributed Systems. Project duration: 30 months. Major validation sites: Pedagogical Institute (GR), Biblioteca di Documentazione Pedagogica (IT), Centre National de Documentation Pedagogique - CNDP (FR.), National Council for Educational Technology - NET (UK), Centro de Formacao da Associacao de Escolas de Aveiro - CFAECA (PT), Centro para la Innovation y Desarrollo de la Educacion a Distancia - CIDEAD (ES).

The TRENDS project aims at the in-service, distance training of 2.400 school teachers in Secondary Education, on the 'use of Information Technology and Telematics in the learning process', from six of the participating countries (400 from each country) - Greece, Italy, Spain, Portugal, France and United Kingdom. The training will be implemented by flexible and distance learning methods, through:

- The development and use of an in-service, school-based training system, which will be based on multimedia telematics and existing, mature network technologies, and will be comprised of a number of services, i.e. e-mail contact, access to multimedia information, 'fora' for debates in the form of electronic bulletin boards and newsgroups, access to curriculum-related information and, finally, teletraining, by

using a properly customised, already available, course on the subject (customisation and synthesis of available courses in Spain, UK and Portugal). The common, in most aspects, for all the six national groups of teachers content of teletraining will consist in a 30-40 hour course, aiming at cultivating positive attitudes to IT, acquiring knowledge on basic IT and telematics issues, understanding their educational potential, developing capabilities for effectively using them in the curriculum and the classroom, etc.

- The establishment and operation of a European Teachers' Training Network, consisted of six interconnected 'National Sites' (Training Centre, schools and teachers in each country) and providing distance training services, by using multimedia telematics, to teachers and teacher trainers. Each Training Centre in the Network will act as service provider to the schools and the teachers, not only from the six participating countries but also from other European regions. The distance training services will be provided by the Training Centres, under a common policy framework (specified terms for marketing, access licensing, registration, accreditation), adapted and described in a relevant memorandum of agreement between the TRENDS partners, originally signed before the end of the project. The management of the Network after the end of the project will be implemented by a Steering Committee, as an independent policy making body, ensuring common policy strategies, IPR handling and expansion actions between the Training Centres.

During the TRENDS project a number of 120 teachers, one from each of the 120 participating schools, will be trained, in the early validation phase, being the trainers of the rest of the 2.400 teachers afterwards, in the project demonstration phase. The 120 'school leaders', from the six countries, will work together for almost two years, thus forming a collaborative network to support teachers' professionalisation in the public European educational systems. The 2,400 teachers, trained by the end project, will consist a critical mass of educators, to support the necessary adjustments of our education in view of the emerging societal needs of the 'Information Society'.

Furthermore, exploitation plans will be developed for extending the outcome of the project, from the initial pilot phase, to an open, school-based teachers training service throughout Europe, aiming not only to the Secondary Education level but also to the Primary Education, in a way that is independent of the content of the training material. (TRENDS, Annex I: Project Programme, January 1995)

2.2. National/Regional initiatives in teachers' in-service training using distance education in EU countries

Traditional and open universities, colleges and institutes mainly in UK, Norway (e.g. Norwegian State Institution for Distance Education), Spain (e.g. CIDEAD), Portugal, Germany (e.g. Hagen Fernuniversitat - Open University of Germany, The German Institute for Distance-learning Courses at the University of Tubingen), Finland, Sweden, Denmark, the Netherlands, offer distance learning courses in education (diploma, certificate, postgraduate degree, continuous education, training, further and community education). They employ a wide range of methods, media and technologies, such as text, TV broadcast, telephone tutorials, study centres, face-to-face tutorials, audio/video cassettes, computer conferencing, video-conferencing. (See: http://www-icdl.open.ac.uk)

The UK Open University educational technology courses via the Internet seem to be an interesting, relatively recent, case of distance learning courses in education.

The Open University, Professional Development in Educational Technology, Online: This Online Programme was launched in 1994, with the three-month introductory course 'Teaching and Learning Online', on the Open University's FirstClass computer conferencing system. From 1996 OU has developed its global reach on the Internet through IET's World Wide Web presence and with an expanded Online Programme, including three new courses, OU expects to have a stronger participation from people outside the UK.

Current courses offered include: Teaching and Learning Online (12 weeks), Information Resources for Open and Distance Learning (8 weeks), Multimedia Development for Open and Distance Learning (8 weeks), Finding Learning Opportunities on the Web (8 weeks), Designing a Distance Training Module (80 hours, 6-8 weeks, individually tutored course), Designing Training for the Internet (80 hours, 6-8 weeks, individually tutored course).

Course participants are required to have:

- Access to a personal computer (a PC with Windows 3.1 or above, or a Macintosh) and modem or network (LAN/JANET/Internet...) access to the Open University's computer network.
- About 10 hours per week time for the length of each course.
- Preferably, an Internet email address.
- Preferably, local technical help in their own organisation as back-up in case they need special technical requirements for network connections and ongoing support.

The Open University provides course participants with:

- An Internet connection pack with software (including a Netscape client) and guidance on the various connection routes to the Open University network, FirstClass client software for the Teaching and Learning Online course, and access to special mail listservers for the other three courses.
- Tutorial support and access to specialists in the field; students will be assigned a personal tutor at the beginning of each course, and they are expected to stay in regular e-mail contact with their tutor, and to participate actively in online discussions with other course participants. OU sets an upper limit on numbers of participants to ensure a good tutor-student ratio overall.
- Online information resources, including specialist databases such as the ICDL database on distance education, and a range of WWW resources, tailored for each course, and kept up to date.
- Set books (in print), and other readings provided online.
- Access to e-mail and telephone hotline services concerning network connections, software, and other technical issues.
- An Induction Day at the Open University where students can meet their tutors and other course participants, collect their Course Guide, set books, and software, and get technical advice and hands-on practice.

- On completion of a course, a Certificate describing the course coverage and recording participation.

(See: http://www-iet.open.ac.uk/PDET/Gen-online.html)

Apart from these professional development courses, there are national initiatives in several EU countries aiming at teachers' distance in-service training as part of curriculum development. It would be interesting to focus on some projects of this type.

2.2.1. Teachers' in-service training via broadcasting

In the past few years in the Netherlands, Sweden and the United Kingdom, educational broadcasters have been engaged in the production of specific projects for teachers, in many cases in conjunction with the national educational authorities, and often to implement new curricula or to change the traditional school education procedure.

- In Sweden, SWF (Sudwestfunk) made a series of programmes on the use of school television for teachers and parents as part of the production of single programmes (using television, radio and print) to be used during in-service sessions and whole courses in topic areas. (Horneij in Meyer, 1992).

- In the United Kingdom, BBC School Television's programmes for INSET ('Teaching Today') began in 1988 to help teachers at a time when major changes were about to occur in the British educational system. The programmes were accompanied with folders of print support. Take-up of the programmes was high (40-50% of secondary schools recording on first transmission). By 1989-1990 thirteen series for teachers had been scheduled. The style of the series ranged from location filming and improvised drama to studio-based discussion. The programmes were also available on video. (Johnston in Meyer, 1992)

- Yorkshire Television, with its series 'Teaching for Tomorrow', contributed to systematic teachers' in-service training, as well. The main issues presented in the series related to the implementation of the National Curriculum, teaching methods, classroom management, discipline, gender and race differences, multicultural population in schools. The programmes were to be used in training meetings and discussions. They were mainly based on case studies reflecting individual experiences in a way that invited discussion. (Scarborough in Meyer, 1992)

- The current in-service training series produced by NCET TV addresses issues of 'Teaching and learning with IT'. This series is designed to target the 'IT-unconverted' teacher as one of its main audiences. In order to maximise the audiences catered for, the programme has been produced in a magazine-style format, each with two 10-minute main topics and a range of short news items and updates. Nearly 12.000 viewers have registered for the free supporting factsheet and resource information service: this forms an accessible group research and feedback, enabling closer targeting of future programmes. These figures represent more than half of all secondary schools. The programmes will also be broadcast through BBC Prime via satellite to 15 European countries (Northern Europe, Scandinavia, Denmark,

Switzerland and a growing number in Eastern Europe). This series provides the opportunity to see teachers talking to other teachers about their use of IT in the classroom. The programmes were broadcast at afternoon or early evening hours and they were repeated. Video series was accompanied with fact sheets. The conclusions from evaluation of Series 1 (October 1995-June 1996) seem to be encouraging. Almost half of the people who has shown interest in the series had translated this into action by watching at least one segment of a programme and often more. Of this group 46% had at least considered using programmes for INSET and other development purposes (i.e. 22% of all respondents of whom 14% had already done so), and 42% were planning to do so eventually. (See: http://www.ncet.org.uk/ncettv/)

2.2.2. Teachers in-service training via networking

The Exeter University Computer Conferencing Project: It started in December 1992 and it is a collaborative project between the School of Education, its partnership secondary schools, and teacher educators around the world. It is using two distinct forms of telecommunication systems: monomedia computer conferencing including electronic mail (CC) and multimedia desktop conferencing (DTC). The project serves a partnership between schools and universities for the purpose of both pre-service and in-service teacher education. The two distinct systems under development complement each other, especially in terms of time and information. One is asynchronous permitting large groups to communicate independent of a strict rendezvous, but permits only text to be displayed. The other is synchronous like a telephone, with participants viewing the same screen and hearing each other talk over the phone line. The use of wider band width of communication permits multimedia communication and it has permitted participants to glimpse new forms of education and training, where learners can collaborate with their tutors in a way which has been rare when sitting side by side. (Niki Davis in Veen et al, 1994)

Northamptonshire Distance In-service Training project: The aim of the project was to pilot and assess the effectiveness of a new model of professional and curriculum INSET supported at a distance with information technology. It involved teachers in a cluster of small rural primary schools using a mix of proven and innovative INSET and support structures based on networked information technology providing interactive access to distance learning materials, expert advice, tutorial and peer support. The project ran initially from September 1994 to July 1995.

The Department for Education made 100.000 pounds available for the project and in addition, along with the Rural Development Commission, funded an independent evaluation managed by the National Council for Educational Technology (NCET). The project equipped the cluster of schools and the science centre of NIAS (Northamptonshire Inspection and Advisory Service) with multimedia computers together with appropriate software managed through a friendly interface designed and developed by Network Learning Ltd. The teachers in the schools and advisory teachers from NIAS were trained in the use of the systems, which enabled electronic communication between all the establishments involved via e-mail and computer conferencing. After conventional attendance at INSET sessions, which focused on science at KS1 and KS2 in the national curriculum, the teachers worked through disk-

based training materials on their local machines, and the communications software allowed them to have dialogues with the course tutor at the NIAS science centre and with each other.

The expected outcomes of the project could be summarised as follows:

1. An electronic network linking the schools with NIAS using desktop computers, modems and the public telephone service.
2. A user-friendly software interface allowing teachers access not only to the materials but also, via modem, to e-mail and conferencing.
3. A CD-ROM produced for the participating schools, based on existing text-based INSET materials and adapted to take advantage of the potential of multimedia.
4. An evaluation of how this model of INSET delivery might prove to be more cost-effective than traditional models, change teachers' behaviour and improve pupils' learning more effectively than traditional models and be particularly relevant to the needs of small rural schools.
5. The creation of a model for professional and curriculum development which seeks to provide a more effective means of support for small schools.

(NCET, 1995)

Multimedia Portables for Teachers (pilot 1996/97): The aim of this pilot initiative is to equip at least two teachers in 500-600 LEA and GM schools in England with multimedia portable computers equipped for CD-ROM or Internet use, or both, in order to develop both confidence and competence in their use of IT and improve pupils' performance through their own increased IT competence. This pilot initiative will be evaluated to provide information on the most useful equipment for schools and best ways of helping teachers deploy IT in schools.

A recent NCET report on school visits includes the following findings:

- Almost all teachers visited are enthusiastically using their machines, both at home and often in the classroom.
- Teacher perceptions of how well they are doing, or how much they have learned are often very critical, and fail to recognise real progress whilst having a considerable awareness of the information still to be explored and understood.
- The main values are gained from the personal 'ownership' and portability.
- Difficulties have arisen from the unreliability of some machines, and lack of access to technical expertise by some teachers. There is a reluctance to ask colleagues for help, as the colleagues first duty is to pupils, and so teachers perceive it as difficult to ask colleagues to spend this precious resource on themselves.
- The computer has enhanced professional presentation of paper output which is positively viewed by both teacher and teacher colleagues.
- The Internet presents on-going challenges, both practical and conceptual and is the area of greatest concern to many teachers from both the technical 'how do I do this?' standpoint, and management of the data and resources found.

(NCET, 1996)

Nordic Schools Network: The five Nordic countries - Denmark, Iceland, Finland, Norway, and Sweden - often collaborate together on issues relating to learning resources development. Recently, this collaboration has extended to the development of a network and network service to link Nordic schools with each other, and with the outer world via the Internet. This Nordic School Network is not only a coordinated technical venture, including for example the development of software tools to allow students and teachers to handle characters in the Nordic languages that do not typically appear in ASCII-based computer communication, but also a coordinated venture in terms of teacher education.

Particularly interesting in the Nordic Schools Network is the careful planning that has gone into the service component of network introduction. Coordinated centrally, inservice takes place using a two-day model. Each two-day model begins on a pre-set day. Teachers in all five Nordic countries come together locally for the first day of the two days, and in their own environment and language have a familiar face-to-face session that partially provides an 'interface introduction' to the Network but also focuses on instructional applications. On the second day, each group of teachers is paired with another group meeting in another country, and activities take place allowing them to practice on-line with each other the sorts of learning activities in which they may choose to engage their students. Because of the centrally organized approach, all the teachers have had a common orientation on the previous day and are thinking in terms of a common set of initial collaborative-learning projects. Also because of the centralized approach, teachers can be authentic practice-partners with each other, and learn about tele-learning via tele-learning.

(Collis, 1996, pp 404-405)

LEARN: LEARN is a Network Service offered in cooperation with the Royal Danish School of Educational Studies and Computer Resources International. LEARN provides a number of facilities which make it easy for in-service teachers and teacher educators to be involved in tell-learning.

From the in-service teacher's point of view, LEARN is seen as a software package which makes it easy for the teacher to get and send mail, assignments, and other course materials; which includes an integrated text editor for editing responses, notes, and e-mail; which offers menu-driven access to various file-handling tasks; and which supports a BBB and various communication options. Students study off-line. From the in-service educator's point of view, LEARN is an environment in which it is easy to add and take away materials and edit the BBB. From an administrator's point of view, LEARN offers facilities to register students, teachers, courses, enrollments, available materials, etc., on the host. The general model for LEARN is: in-service teachers retrieve material on-line, logo and work off line on the materials, and go back on-line to send materials back or discuss the materials. A variety of in-service courses are currently taught with LEARN support, not only to Danish teachers but to teachers in a number of other countries (through multiple-language interfaces for the LEARN software).

(Collis, 1996, p. 523)

The data-communication software for LEARN is not in itself a teaching module or an authoring system. It is purely a communication system in which, in a simple and easy

way, the course material can be retrieved and contact established with a course teacher. The common feature of each of the distance education courses offered within LEARN is that the choice of educational method is completely up to the designer of the individual course. For one particular course a teaching method which relates to traditional programmed teaching may be appropriate. For another course a teaching procedure based on discussion may be more suitable. Distance education courses, which are offered alongside ordinary in-service training courses at the RDSES, have been shown to fulfill a considerable need for many teachers precisely because of the flexibility they provide. (Anttila & Eriksen in Veen et al, 1994)

The PIT Project: Another innovative approach to teacher in-service training that can be organized at the regional level is to use tele-learning via a regional network as a way to extend traditional face-to-face training sessions. In the Netherlands, an initiative has been in place since 1993 in which secondary-school teachers and curriculum specialists, in groups of about 25 teachers each, form specialist network groups around different content-related issues, such as helping immigrant students with the Dutch language or teaching physics using a data-modelling approach. Each of these groups meets six times a year in a face-to-face session, coordinated by a ministry-level management team. But between the face-to-face sessions, teachers continue to work together on sharing their experiences and developing lesson materials, via free access to a national BBS for teachers. During the 1995-1996 school year, a WWW environment with Internet access was also used. The teacher networking between face-to-face sessions has emerged as an effective model for teacher support, providing the teachers with a moderated and useful reason to keep interacting with each other and thus to learn from each other. In The Netherlands, over 1,000 teachers have been participating in this network. (Collis, 1996, pp 405, 524)

The Catalonia Project: Teachers in eastern Spain want to participate in various in-service programs, but find it difficult to move from their homes and working centres to the major city of Barcelona and to pay for their travel and expenses. Thus tele-learning became not only a topic to teach about in some of these courses, but also a training and communication channel. The regional educational-support centre set up a network and its associated on-line services, with on-line data bases of educational resources for teachers to use in their lessons. The network also supported a computer conferencing system called AGORA. Teachers received a variety of materials: text materials, a computer-based tutorial on how to use the on-line system, complementary readings and software on disk, and a user handbook. Face-to-face meetings were also held, to give the teachers instruction in how to use the different media and particularly the conferencing and e-mail options. (Collis, 1996, p. 523)

Telematics is used to provide the following services to teacher training: (a) a distance delivery system to download files and text materials, (b) a collaborative learning environment based on teleconferencing and (c) continued private tutorial help and guidance by means of electronic mail. 9 groups of schools and 270 teachers are involved. The subjects which have been offered are: Statistics, Informatics and Social Sciences, Educational Use of Spreadsheets, Teledocumentation.

Participation in a course implies the study of the subject using study guides and other related materials. Students are requested to do work assignments, which are sent to the

teacher through an e-mail system. E-mail is also used to communicate with the teacher for consulting about doubts, etc. Students are also requested to participate in collective discussions ('debates') concerning conceptual aspects of common interest of the course topics. Launching of concrete work assignments as practice elements associated to each study module has proved easier than the organization of conceptual debates. The main reason for this is the lack of time of the students, that has resulted in their giving priority to the realization of work assignments versus participation in debates. (Verges, Castells et Ruiz in Veen at al, 1994)

2.2.3. Teachers' in-service training through provision of teaching resources

Switzerland (Canton of Geneva): All resource materials produced by Ministry of Education are in electronic form and supplied to all schools via a comprehensive network service; lesson materials are in French, German, Italian and Romans; an extensive collection of 'success stories' is maintained concerning teachers' uses of information technology in teaching; the collection has been available to teachers as well as others in the region via a closed videotext-based network. These services are moving toward a WWW-based network environment that allows access to the Internet.

Spain (Catalonia): Extensive database of successful lessons involving tele-learning experiences, contributed by teachers and maintained as a teaching resource by the central educational-network service. The resources are accessible by dial-in connections to a central server.

Ireland: The NITEC Network has evolved over a number of years to connect schools and other educational authorities, offering a range of services including many data bases of lesson materials and repositories of downloadable software.

Denmark: The Schools Database Service (SDBS) provides access to a range of databases with 'a reasonable degree of educational value', either through the recommendation of teachers or specialists in the Ministry of Education. There is continual updating of the databases. The schools pay a yearly subscription fee, but then have unlimited access for both students and teachers. This unlimited access is also for a range of moderated conferences and for Internet access. Every user, student and teacher, has an Internet address.

The Netherlands: A large collection of downloaded lesson materials is accessible to teachers via a BBS run by the national curriculum institute; over 25 moderated discussions, organized around curriculum areas, are also maintained, and teachers are subsidized in their costs of accessing the network by the national PIT (telephone company). The service is changing platforms so that Internet access can also be offered. (Collis, 1996, p. 231)

3. Number of teachers trained using distance education in EU countries

3.1. Number of in-service teachers trained in EU countries

It is very difficult to provide numbers of teachers who asked for and received in-service training in EU countries for the following reasons:

- in-service training is too recent a phenomenon for EU countries to draw conclusions and provide statistical data,
- some EU countries are not used to keeping statistics in this field,
- the decentralization of teachers' training procedures makes it impossible to obtain overall idea of the numbers involved.

However, the partial information available implies that the rate of participation in in-service training remains relatively low. In countries where career advancement is linked to in-service training (Spain, Portugal), the rate of participation is naturally higher, and reaches as much as 70% in Portugal in pre-primary education. Also, in Denmark and the Netherlands, one third of teachers participate in in-service training every year. (Eurydice, In-service Training of Teachers in the European Union and the EFTA/EEA Countries, 1995, p. 20)

3.2. Number of teachers participating in current distance education programmes for in-service training (EU and regional)

The International Council for Distance Education has estimated that around 10.000.000 students are taking degree courses at a distance in the world. However, no organisation has attempted - till now - to estimate numbers of people using distance education methods for other areas/levels of study, but it is reasonable to infer that are comparable. (Kaye in Mason & Kaye, 1989).

Additionally, current european transnational projects form only a part of the overall picture of teachers distance in-service training. By providing the number of teachers participating in the three principal european projects for distance in-service teacher training, we cannot argue that we 'cover' the whole field. National and regional projects, such as the ones described in the previous chapter, often involve up to or more than 1.000 teachers (see: the PIT Project, the Multimedia Portable for Teachers Project). However, the data available do not allow us to provide a full picture of teachers' participation in current DE projects for in-service training in each EU country.

Below numbers of teachers involved in the three principal european projects for distance in-service teacher training are given:

TRENDS: 2.400 secondary school teachers in six countries (Greece, Spain, Portugal, France, Italy, UK), 400 teachers in each country.

REM: 968 teachers and students from nine countries (UK, Spain, Finland, Denmark, Sweden, Ireland, Portugal, Greece, Italy). The number of teachers alone is not specified.

T3: Over 4.000 teachers in six countries (UK, Ireland, France, Netherlands, Portugal, Finland).

3.3. Some conclusions/justifications on the profile of teachers participating in in-service training using distance education

In general, it seems that distance education always appealed to advantaged, highly motivated, often educationally privileged adult learners. (Nipper in Mason & Kaye, 1989). Previous experience, educational background, motivation and attitudes of the learner determine participation and involvement in distance training courses.

It could be argued that teachers participating in in-service training using distance education tend to be relatively young. All things considered, it is difficult to draw conclusions since there is no statistical research available. However, we suspect that when distance training is delivered by new information and communication technologies is more likely to attract younger or more 'technologically-converted' teachers. We should not forget that the use of modern technology is not bias-free and its acceptance is often dependent on the age, sex and previous experience of the user-trainee.

4. Cost-effectiveness of teachers' in-service training using distance education

4.1. Cost-effectiveness of teachers' in-service training

It appears that the budget for in-service training rarely amounts to more than 1% of the total education budget. However, it is almost impossible to compare the data from different european countries for the following reasons:

- decentralisation of in-service training and direct financing of local authorities and/or schools.
- many different sources of funds, for instance several branches of a Ministry or of local government.
- different content of the budget (it may include trainers' salaries, or travelling costs and course fees for teachers who leave their own school for training or it only covers the funds allocated for the organization of training).
- categories of staff covered by this budget varying according to the organizer.

(Eurydice, In-service Training of Teachers in the European Union and the EFTA/EEA Countries, 1995, p. 18)

Therefore, we cannot fully evaluate cost-effectiveness of teachers' in-service training if we are not aware of the actual investment in it.

However, it is beyond doubt that, since teachers' continuous professional development contributes to the development and improvement of school education, the society as a whole benefits from investment in teachers' training. Still, we cannot always judge cost-effectiveness from a strictly economic aspect. Educational development is not just an economic phenomenon.

4.2. Criteria for measuring cost-effectiveness of ODL training

Cost-effectiveness of distance training can be proved if we take into consideration that 85% of the total training cost is due to the working time lost to the employers when an employee goes away for courses. Nevertheless, distance education is really cost-effective when it involves great numbers of participants (trainees/students). Jamison and Oriel (1982) point to the now widely accepted finding that the proportion of fixed costs of distance education is high (often exceeding 50 per cent) and well above that of conventional institutions. In that context, enrollment levels are crucial for long term viability of distance education programmes so that the annualised value of capital plus other costs can be spread over a large number of users during the project lifetime. Increased enrollment reduces the unit cost of distance education (Sparks, 1990; Ludlow, 1994). (See: Moon, 1996)

Perraton (Moon, 1996) in a study of eleven distance education teacher education projects suggests that:

> *two broad conclusions to emerge from the studies...where it has been possible to measure effectiveness, teacher training at a distance can be effective and that its costs tend to be lower than conventional education...where we have detailed figures it is reasonable to conclude that distance education programmes can be designed for teachers at a cost between one third and two thirds of conventional programmes.*

A comparison of Open University and traditional university costs in Britain in 1986 showed that the cost per full time equivalent student at traditional universities was about 2.6 times the cost at the Open University, while the cost per traditional university graduate was 2.4 times the cost of an Open University graduate (Rumble in Mason & Kaye, 1989). Of course, all these happen in the context of media-based mass distance education, in which big masses of learners are involved.

The cost-structure of media-based mass distance education is well understood. In essence capital, in the form of materials (print, audio-visual and broadcast, computer assisted learning), replaces the traditional labour-intensive approach to education, in which there is a direct relationship between number of students and teachers. While the development and production of materials requires a high initial investment, once developed they can be used, often for a number of years, to teach any number of students. Provided that there are sufficient numbers of students, and the number needed will vary depending upon the choice of media, distance teaching ought to be cheaper than traditional forms of education. There are, of course, other forms of distance education which involve personal tutoring at a distance (using correspondence, telephone and electronic forms of communication) or which are based on guided reading and textbooks. Such approaches avoid the high fixed costs and capital-intensive nature of mass-media approaches, and have consequently a very different cost-structure to mass media-based systems.

4.3. Cost-effectiveness of New Information and Communication Technologies in distance education

Although most scholars agree that using ICT must be integrated in education, some argue that ICT is not a tool to shift the costs of education downwards (Bates, 1995), is not cost-efficient (Pournelle, 1994) and will be subject to continuously rising costs in the first coming years (Cambre, 1991). Comparative studies of ICT based education versus traditional schooling often end in conclusions that there is no significant difference and no measurable effect (Herman, 1994). Traditional ways of assessing the effectiveness of educational programs generally fail when assessing the contribution of technology. Evaluating technology effectiveness in education poses special problems, because additional educational changes, beyond the technology, needed to reveal the technology's full promise (Merrill, 1995). (See: Claeys, 1997)

In this context, an economical analysis of new information and communication technologies cannot be separated from a pedagogical and organisational analysis. Claeys (1997) claims that for a complete analysis one should identify all relevant parameters at the level of the:

(a) *imput: learner-related characteristics (sex, intelligence, motivation), teachers' time, salaries, organisational culture, type of technology used etc.*

(b) *educational/learning process: method of instruction, degree of teacher training (are teachers sufficiently prepared to teach at a distance using ICT), examination method etc.*

(c) *outcome of the education: acquisition of higher order skills, reducing drop-outs, increased motivation and self-esteem, increased skills for interaction and communication, job placement success.*

(d) *educational system: institutional factors, curriculum, degree of autonomy, attitude toward cooperation with business.*

In other words, we cannot compare the cost-effectiveness of new information and communication technologies in teachers' training to the cost-effectiveness of traditional media, if we do not take into account the environment, the process and the outcome of training. What is cost-effective in a certain environment or institution may be not cost-effective in another environment. For instance, television transmission can be cost-efficient compared to numbers of learners reached, if the infrastructure is in place for the transmission to occur, if there is a critical mass of learners that are being reached, and if extra personnel are not needed to provide personal support to these extra learners. Computer-network transmission can be cost-efficient regardless of the number of learners to be reached, if the infrastructure is in place for the transmission to occur. (B. Collis, 1996, p. 44). A. Bates is one of a number of specialists who make projections on the relative costs over time and number of students for the operating expenses of different forms of transmission technologies. A first issue in any comparison is what to use as the unit. Bates uses 'costs per study hour' and 'costs per student contact hour'. These are not the same, and very much depend on the instructional design of the course rather than some intrinsic cost-aspect of a transmission technology itself. (Collis, 1996, pp 375)

All things considered, ICT-based distance education is generally expensive both in start-up costs and in on-going support and provision. Costs include personnel and operating expenses such as facility maintenance, travel, mail, print materials, contract services, PR, supplies, transmission costs, computers, and overhead. Operating expenses are estimated by Eidgahy and Shearman to involve 30-55% of a tele-learning budget, depending on signal-transmission costs.

As an example of how variable transport costs can be, Kugemann (1993) has calculated the delivery costs for a megabyte of digitized information via various sorts of transport channels in Germany, and, among a variety of observations, found that the costs of sending video material on cassette videotapes (before digitization) through the mail to be substantially less than sending the same material via satellite (a factor however which varies according to the number of receivers; for sending to one receive site it is a ratio of 1:100). In contrast, Kugemann calculates that sending 1 MG of textual information (approximately 200 A4 pages) by ordinary mail can be 30 times more expensive than if sent via modem-transfer through ordinary telephone lines. The scaling of these costs in terms of number of receive sites must be calculated differently than in the case of

satellite receive sites, but the main point of Kugemann's analysis is, that the decision to add real-time interactivity to video transmission vastly increases the cost of delivery, whereas for text, where asynchronous access is expected, network technology can substantially decrease the cost of delivery as well as increase the speed. (Collis, 1996, p 374)

4.4. Some conclusions on cost-effectiveness of teachers' in-service training using distance education

In an attempt to define cost-effectiveness of teachers' distance in-service training, we have to look at several aspects: technological, pedagogical, organizational, social, fiscal. In other words, cost-effectiveness of a course cannot be evaluated only by comparing costs of different technological applications. If effectiveness refers to the degree to which an organisation approximates to achieving its goals, then we should be very careful in considering the short-term goals as well as the long-term implications at both the individual level and the level of the society as a whole. (Claeys, 1997)

In this context, cost-effectiveness largely depends on the nature of benefits/outcomes of the training course. If the use of a new method/medium/technology brings an added value to the course or encourages learner-autonomy or creates new learning opportunities, it cannot be judged only on an economic basis. On the contrary, it should be viewed as a new dimension of the training course and evaluated for its own merits.

Undoubtedly, viability of a distance course is a crucial factor of cost-effectiveness. Viability depends on the number of teachers-trainees participating in a training course. Since distance training very often requires heavy investment in infrastructure and equipment as well as learning materials, it is not viable, if the number of trainees is not large enough. Especially in tele-learning situations, telecommunications costs play a key-role in viability of a course. Of course, if the infrastructure exists, cost-effectiveness is likely to increase. However, when telecommunications form part of the training course, cost-effectiveness is likely to decrease to a great extent. The use of telecommunications could prove to be more cost-effective when small groups of trainees participate in the course. Broadcasting media seem to be a more cost-effective solution, if there is a need for in-service training of a big mass of teachers.

Viability should not be merely viewed as an economic concept. There is a human/social dimension to it that needs to be emphasised. Acceptability and user-friendliness of a course significantly contribute to its viability. A major problem of distance training is trainees drop-out. Therefore, trainees participation and active involvement prove to be essential factors which influence viability and cost-effectiveness of a distance training course.

All things considered, cost-effectiveness is too complex an issue to be considered on a strictly economic basis. If the organizational structure of the institutions involved, the learners' requirements/needs, the infrastructure available, the learning outcomes (short- and long-term), the social processes and benefits from the course, are not taken into account, cost-effectiveness cannot be really evaluated.

5. Effectiveness of various media in distance education

5.1. Research findings on effectiveness of various media in distance education

It would be useful to look at the media used in the three phases of distance education and attempt at comparing their potential and limitations. The three generations of distance education reflect the three models of distance education through the development of production, distribution and communication technologies.

- The first generation of distance education was based on printed materials distributed by mail (correspondence teaching). It arose in the last decades of the 19th century due to the new printing techniques and the railway system and it is related to the development of the printing press and the Post Office. These developments allowed the production and distribution of teaching materials in large quantities to geographically dispersed learner groups. The feedback processes were slow, sparse and usually restricted to the period of submission of assignments.

- The second generation of distance education promoted multi-media distance teaching. It arose during late 60s. It was characterised by integration of print with broadcast media (radio, television), cassettes and, to some degree, computers. The feedback processes were similar to those of the first generation but also included telephone counselling and some face-to-face tutorials. The main objectives of this generation were the production and distribution of teaching/learning material. Communication between tutors and learners was marginal and communication among learners was almost non-existent.

- The third generation of distance education consists in training courses which use interactive systems and services (teleconference, computer conference, videoconference, teletutoring, CD-I, CD-ROM, DVD, etc.). It promotes interactive and collaborative learning and makes use of the latest information and communication technologies, aiming at the integration of various media and tools.

  (Nipper in Mason & Kaye, 1989)

Media and technologies used in the third generation of distance education provide solutions to problems and difficulties of the previous generations but also pose new questions to be answered. The problem for distance education in its first two phases was to break free from the tendency to over-emphasise the package and provide students with a learning experience which meets their personal needs. It should be noted that, although the technologies used were widely available and accessible, there was still social bias in the recruitment of learners. Lack of communication and support favoured the educationally already privileged learners and deterred the socially/educationally weak groups. An element of two-way communication between teacher and learner was missing, and that need not involve actual face-to-face contact.

In nineteenth century distance teaching systems two-way communication was provided solely through written correspondence. Later on the telephone came to be used, initially for individual conversations but subsequently for group audio-conferencing. Most recent

developments have involved the use of video-conferencing, TVI-type systems (video-out and audio-back), and electronic mail and computer conferencing systems. For example, the principal aim of computer conferencing is to overcome the problem of social distance between learners and teachers and not just geographical distance. Apart from this, it allows for more openly structured curricula, thus not only reducing the production/storage costs traditionally associated with distance learning material but also making possible much quicker updating and revision as well as the development of individually tailored courses, serving specific needs. In addition, many distance education systems do have an element of face-to-face interaction between students and tutors for teaching, counselling or socialisation purposes. Such meetings may be individualised but more generally occur in groups, and may be for varying periods of time - evening tutorials and seminars, whole day or weekend workshops, or residential courses of a week or more's duration. There is plenty of evidence that such contact is enormously valuable. (Rumble in Mason & Kaye, 1989).

Media choice in the third generation of distance education proves to be a complex process for many reasons. First of all, selection of media cannot be separated from issues of learning method, environment and learner characteristics. The problem is that comparison studies of media are always limited in how much of a direct answer they can provide. Frustrations in media-comparison studies are related to the impossibility of determining the effects of a particular aspect of course delivery, considered in isolation, since there are too many variables, all interacting. For example, Sholdt, Zhang and Fulford reviewed the findings about the difficulty of natural interaction in interactive television settings and showed in their study, that with a skilled instructor distant students found interaction easier than did face-to-face students. Hackman and Walker found that when the instructor used good teaching techniques, such as addressing students by their first names, probing students' feelings about assignments, and displaying, when appropriate, a sense of humour, that students in a remote setting were as satisfied with the educational experience and performed as well as students in a face-to-face setting.

Increasingly, researchers are recognizing the weaknesses in such comparative assessments, and trying to refine their design methodologies or ask different types of questions. For example, Salomon examined the interaction between human cognition and media as a variable in the learning outcome, instead of just comparing the outcomes of using various media. Salomon found that the 'amount of invested mental effort' (AIME) the learners expend while learning with a medium is not only directly proportional to the learning that occurs but is also strongly related to the perception the learner has of the difficulty of the medium. In other words, cultural, cognitive and affective factors may influence learning from media. Therefore, media choice cannot be seen as a simple and straightforward decision (Collis, 1996, pp 437-8).

All things considered, it is the interaction between media and learners/teachers that determines the effectiveness of media and not their intrinsic value or potential. We may conclude that most content can be effectively conveyed through most media; there is more variance within categories of media-delivery applications than between them. It is not the technology alone that determines whether or not learning is successful, but the way in which the technology is used. Much of media/deliver-technology choice is determined by the context, particularly the history of such choices in an institution.

(Betty Collis, 1996, pp 439-443). The key to success is matching methodology to context.

As Levinson in Mason & Kaye (1989) points out: 'But, by and large, media seem to survive depending on how well they satisfy cognitive (and other) needs that are already in place in the human psyche, whether by biological (most likely) or extended social encouragement'. In distance education, media are often chosen, primarily, for logistic reasons and reasons of cost-effectiveness, secondly, for pedagogical reasons. However, media are not neutral vehicles for dissemination of knowledge to the learners. Media - and especially the genres and text formats which they use for communication - are developed in an ongoing historical process integrated in the cultural and social history of the society.

For instance, interactive media such as CD-ROM and WWW, are especially important for the transference of knowledge in subject areas in which the knowledge may be organised according to logical and hierarchic principles. The hyper structure of these media supports the interaction between the learning and the learning material, while, at the same time, the learner remains in a position where he or she controls the learning process. However, they are not an answer to all our educational problems since interactive media do not support the narrative dimension, that is essential to the understanding of the arts, history and cultural studies. (Bang, 1997)

5.2. Research findings on effectiveness of network-based distance education

Network-based distance education currently employs the following technologies: technologies for Computer Mediated Communication, the World Wide Web and Desktop Multimedia Conferencing Systems. It would be interesting to look at the potential, effectiveness and limitations of the aforementioned technologies as components of network-based distance education.

Technologies for Computer Mediated Communication
(i.e. real-time computer-based communication: chat, MOOs, audio and video on the Internet / e-mail systems, computer conferencing technologies, bulletin board systems)

Potential/effectiveness: As Grint in Mason & Kaye (1989) suggests, there are advantages, such as the flattening of hierarchies, the expansion of participation, the channeling of attention away from the messenger and onto the message.

Levinson in Mason & Kaye (1989) argues that: 'CMC, and the advent of personal electronic interactivity in general, rank with the alphabet and the printing press as signal developments in cognitive media. Unlike literal audio-visual media that replicate the content of human communications - the colours, shapes, images, and sounds of the world, all crucial components of human communication - the media of text give expression to the process of human communication, and its aspiration for contact with any idea ever thought, any person, anywhere, and at any time. Alphabetic manuscripts and books were the first realisations of this aspiration, for the reader of the book is in communion with its author, regardless of where and when the author lived. But the connectivity of the book pales in comparison to the possibilities of CMC'.

Limitations/problems: As Grint in Mason & Kaye (1989) suggests, there are problems in using CMC, such as absence of continuous, spontaneous/real-time exchanges, sensory overload related to the large amount of information, fear for student errors and software problems, indelibility of message. These problems emerged from interviews with students of an Open University course in IT.

Somekh in Mason & Kaye (1989) suggests that the major problem with CMC is getting people to use it. People may hesitate to use it if they feel that it does not fit their self-image or that communication is about human relationship and, thus, there is no place for a machine in it. Taking remoteness into consideration, collaboration can prove to be difficult unless there is a shared purpose/interest for all participants or even a sense of adventure in finding unexpected friends.

Zorkoczy in Mason & Kaye (1989) identifies the following limitations in using CMC: minimal guidance (by the system) to effective navigation for novice users, overwhelming by vast amount of relating, unstructured information, conventions of communication which are considered rather complex and cumbersome. He concludes that computer conferencing systems will become a routine component of multimedia distance learning systems, only if they provide personally relevant information for their users and promote convenience of use.

The World Wide Web

Potential/effectiveness: As an information tool, the real power of the Web technology is that everything is accessible to anyone with an internet connection anywhere in the world. The global accessibility is what makes the web especially interesting from an educational perspective. The Web makes it easy for students (and teachers) to access knowledge and people from every imaginable source. This brings realism and authentic learning to any educational activity. With the Web students can find original materials and collect first-hand information themselves. The Web provides an easy mechanism for students (and teachers) to make their work public and share it with others. This can be especially motivating. Furthermore, students can examine the work of others from around the world and this allows for global comparisons, collaboration and competition. The Web provides an easy way to distribute knowledge-based system materials. This will result in more interesting and meaningful learning materials that appeal to a broader range of students. (Salem, 1997)

As a communication/collaboration channel, the World Wide Web proves to be a powerful learning tool, a rich, common, public environment on which teachers and learners can work collaboratively on the creation of a shared product in the same physical location or at a distance. The learning product is visible to the world, for reactions and comments. This is a motivating factor. It is remarkably standardized. The threshold for beginning use and first-time design is low. The sense of energy exuding from its explorers is enormous. It is for both real-time interaction - when used as a tool by the instructor or by learners working together in traditional settings, as well as asynchronous interaction. It supports creativity and communication at the same time as it supports individual or group access of text-based information.

As a tool for delivery of educational materials, the World Wide Web involves minimal software costs, simple preparation and customisation of information, accommodation of copyright-free internet resources, rapid updating of information, opportunity for students to interact with the system from home.

As a tool for computer-assisted learning (tutorials, simulations, formal and self-assessment), the World Wide Web offer pages which may be updated, altered, customised easily without disruption of the tutorial as a whole. HTML language facilitates production of WWW pages very rapidly and with ease for individuals with little experience. The fact that the browser software will automatically launch other software as required means that greater flexibility and interactivity can be integrated into the tutorials. The linkage to the largest on-line resource available. The WWW-teaching package can be directional but then stimulates the student to take control of their own learning experience by reaching out and researching the topic through world-wide links to relevant resource information. WWW pages, images, sound, text can all be printed or saved electronically allowing students to create their own revision tutorial. The WWW question software allows a larger assessment testbank to be generated and formal assessment to be incorporated with the answers being directly e-mailed by the tutor or server. Students receiving training in the use of a single software package, the browser, are able to access and use any WWW-based teaching aid.

Limitations/problems: As an information tool, the World Wide Web may be frequently busy, especially in certain hours of the day. Its hypertext structure can sometimes be distracting and its documents are often poorly structured, without any guidance. Since the WWW is easy to publish on, there is no pressure to maintain high quality standards (accurate, up-to-date, reliable and aesthetically pleasing content). Data are often removed or moved to new locations, thus users encounter broken links, that may cause frustration. (Ibbotson & Aiken, 1996)

As a tool for delivery of educational material, it presents the following problems: Many WWW servers have already started to restrict access to their site due to the immense volume of connections. Increase in electronic communication traffic on the Internet and differing bandwidths available ultimately result in slow document retrieval during particular times of the day. Without structure, the WWW may become little more than an immense jumbled resource.

As a tool for computer-assisted learning, the WWW has the following limitations: There might be low transmission speeds. Client machines must have the appropriate software loaded and correctly configured. Image intensive pages can take time to load even on an intranet system. Pace of change has already taken place with later versions of browser software supporting software plug-ins and incorporation of these new facilities requires knowledge of the programming languages involved. (Barnett, 1996)

Desktop Multimedia Conferencing Systems

Potential/effectiveness: Desktop conferencing can provide a new rich and varied resource for education and training. This new technology can perform a number of roles in addition to the current uses of a pair of phone lines and a powerful personal computer. In most cases the value of the system will relate to those who participate: the motivation

and application of the learner, the skill and art of the teacher or mediator, and the value of the resources available through the link. DTC can provide extensive support for higher-level skills, particularly those relating to software applications in the curriculum. Timetable problems change. Travel time and cost are certainly saved. The use of wider band width of communication permits multimedia communication and it has permitted participants to glimpse new forms of education and training, where learners can collaborate with their tutors in a way which has been rare when sitting side by side. A view of participants' faces is assumed by many to be the most important source of information between teachers and pupils. This information can be particularly important when confidence is low. (Davis in Veen et al, 1994)

Limitations/problems: The major problems in using desktop multimedia conferencing is the lack of interoperability (limiting number of potential partners and base of experienced users to turn to for peer-to-peer help) and difficulties of connecting a desktop system to an adequate network (for instance, ISDN network). (Collis, 1996, p. 64)

There are times, where the teacher suffers from an information overload which is similar to an over-busy classroom, but also different. The teacher has several different channels of information to attend to: his or her own workstation running at least two different applications, the incoming window from the distant workstation, the telephone handset's buttons and lights, the audio phone line which may have a number of voices on it, and the non-computer based materials.

Delays cause immediate problems due to time taken to refresh the incoming DTC screen. The organisation of time and topic for sessions is a major headache - which could be minimised by the use of CC and electronic mail (asynchronous communication).There are costs in terms of increased organisation, resources, and access. The latter costs will vary with the institutions concerned. Also, there is a need for reduced rates for telecommunications in education. (Davis in Veen et al, 1994)

5.3. The potential of Computer Mediated Communication in teachers' training: Justification, applications, benefits, weaknesses

Justification: In education, the networking of distance learners for course delivery and mutual support can provide effective supplements to on-site training and professional development. CMC can support teachers in developing effective teaching and learning strategies and lead others to question and alter their own values thus improving the ethos of the classroom and children's learning. (NCET, 1996). In addition to that, teachers can save valuable time through the sharing and information transmission that electronic networks can foster.

Applications: Mason (NCET, 1996) has identified the following applications of CMC: for enhancing tutorial support, as a forum for interaction between teachers and learners, as a medium for mutual support, for facilitating access to expert debate, as a teaching medium, as a tool for course delivery.

Benefits: Early evidence from a number of projects suggests that the benefits of CMC for staff development and training are considerable: Participants can be involved in several discussions at once, something difficult to achieve in face-to-face discussions. Discussions are recorded electronically and can be accessed at other times, as part of an institution-wide or faculty-wide programme. When teachers open their doors onto the Internet they can share research and ideas about teaching and learning with international communities and create an electronic community of teaching colleagues, people with common research themes and special interest groups. In this way, they stop feeling isolated. Time and place become unimportant when they use asynchronous electronic communications. Conferencing encourages sharing and dissemination of ideas. Moreover, participation in the conferences can be active or passive, as users may never post messages, but learn a great deal from reading the discussions.

The particular strengths of CMC as a support mechanism are: access to tutor and peer support on demand, communication which is independent of time (asynchronous) (with portable computers access is also independent of location), access to national and international research/expertise/opinions, access to materials as required.
The particular strengths of CMC as a delivery mechanism are the following: Training locations can be flexible and not necessarily local. Learners can experience scenarios outside their experience. Entry and exit points can be selected by the learner. This immediacy of control means that the course is delivered at the pace of the user. Furthermore, learners can return to consolidate their learning. Finally, the increasing availability of portable computers means thet learners can choose the most suitable time and place for study.

Weaknesses: CMC as a support mechanism presents the following weaknesses: It demands access to reliable personal equipment as well as local technical support and training. It can increase workload for tutors. It involves increased telecommunication costs. As a delivery mechanism, it creates the following problems: It demands capital outlay for hardware and software. It may cause users anxiety over having time to read all the messages. It requires provision of training. Equipment needs to be available, reliable and readily accessible. Tutorial support may be limited or unavailable. Courseware may be poorly researched or inappropriate for distance learning. (NCET, 1996)

6. Testing and verification of distance education programmes in teachers' in-service training

In this section we will present a testing and verification scheme, implemented in TRENDS Project and aligned with the Usability Guide for Telematics Applications for Education and Training.

6.1. Identification of representative users and negotiation of their involvement

Developers of a distance education programme in teachers' in-service training cannot support the needs of all users/trainees without their active participation in the design and validation of the programme. For this reason, it is essential that representative users are identified in the very beginning of the design and developers negotiate their (users') involvement in the programme.

In TRENDS Project, the target group was chosen to be a critical mass of 2.400 secondary school teachers in the six participating countries (i.e. 400 teachers in each country). It should be noted that among this mass of teachers, there are 400 'school-leaders' (20 in each country), who are called to play a co-ordinating role during pilot phase in-service training of their colleagues in schools. It would be interesting to see how target groups were identified in each country of TRENDS project and in what way their involvement was stimulated and negotiated.

In France, the TRENDS target group is composed of 400 secondary school and documentary teachers specialised in the subjects to be taken up within TRENDS forums. The 20 school-leaders were selected with the collaboration of National Ministry of Education. In Greece, the target group consists of 400 secondary school teachers, in Gymnasium, Technical/Vocational Lyceum and Comprehensive School. These schools were selected because they are fully equipped with computer laboratories or they already participate in educational networks, thus facilitating implementation of TRENDS network services. The school-leaders were selected on the basis of their qualifications (Information Technology expertise, good command of English language) and their involvement in the project was voluntary. In Italy the target group consists of 400 secondary school teachers, who do not belong to specific disciplinary groups. In Portugal the target group consists of 400 teachers from basic education (2nd/3rd cycle) and secondary education. All participating schools belong to the CFAE (Association of Schools of Aveiro). The 'Conselho Directive' made decisions regarding the school leaders. Participation of school leaders in the programme was voluntary. They were asked (through a specially designed questionnaire) if they wished to be school leaders and for what reason. In Spain the TRENDS target group consists of secondary school teachers. In UK it is also composed of secondary school teachers. There is a mix of genders and age groups. Teachers can be divided into five groups: nearly qualified teachers (with less than 2 years of experience), Information Technology teachers (with 2 or more years of experience), classroom teachers (with 3 or more years of experience), curriculum leaders (in specific subjects) and teachers from the Senior Management Team. At least 4 teachers from each of these categories were included in the target group. TRENDS in UK used teachers involved in other projects with network communication capabilities. It identified those teachers who indicated a wish to develop

their skills in using the WWW as a teaching/learning tool or resource. There are teachers with different levels of knowledge of IT and sufficient numbers of teachers teaching at each year group. Teachers in a spread of curriculum subjects were selected, in order to engender relevant peer support and communication. (User Requirements Specification, Annexes A-F: National Sites User Needs Specification, TRENDS, July 1996)

In general, it could be argued that the following factors were considered in identifying users and negotiating their involvement in TRENDS training programme:

- National policies/priorities
- Practical/environmental/institutional constraints
- Users' willingness/interest
- Variety of subjects/specialisations
- Variety of age-groups
- Different level of experience in the use of Information Technology

As far as the school-leaders are concerned, the selection criteria could be summarised in the following points:

- National/institutional priorities
- Users' willingness/interest
- Expertise/experience in the use of Information Technology
- Good command of English language

6.2. Specification of users' needs/requirements

Interviewing of the selected users' groups was used to bring facts to light about the training system to be implemented. This was coupled with the review of other information sources (e.g. related documents, systems in operation, developers of other systems). The acquired knowledge about users' requirements and training needs was documented, in order to produce the Requirements Specification Document, dealing with tutorial methodologies (team work and/or self-learning), course material (syllabus of the foreseen training course), media used (off- and on-line digital media, printed and other material for guidance, etc.), delivery of the distance training services (registration possibilities, access procedures, participation in tele-training course, accreditation mechanism).

A selected field-proven standard modelling process (e.g. SADT, SDM, SSADM) was followed for determining the educators' and trainers' requirements, and for documenting acquired knowledge by appropriate models and validating them through interactive review. The overall identification and analysis of users' requirements was decomposed into several activities:

- Interviews with users from the selected user groups.
- Survey of conventional educators' training.
- Specification of basic telematics and organisational needs.
- Analysis of user requirements.

- Definition of functional specifications of the distance training services and the technical specifications of the Network.

The method stated below for the determination of user needs was adopted in the context of the TRENDS Project by the participating countries, with slight variations as dictated by the differences observed in the structure of their educational systems. More precisely, the following were carried out:

1. Interviews of a number of key persons and experts (indirect users of the TRENDS project), from the fields of Education, Information Technology, ODL, with an agenda of topics related to the teacher's work, his/her initial training, his/her in-service training, the new role of teacher implied by the introduction of new technologies in the learning process, his/her needs for support etc. Conclusions were used to master guidelines on which the questionnaires were based.

2. Organization of discussion panels/workshops, with a marginal extension of the numbers of these key persons and experts, for brainstorming and discussion of the aforementioned topics.

3. Questionnaires addressed to potential end users (school teachers), who were divided in two groups: users with experience, in the use of ICT for educational purposes and users without experience in the use of ICT for educational purposes.

It is necessary to lay stress in the fact that the justification of the outcomes for each of the participating countries was ensured by:

- the involvement (discussion and/or questionnaires) of end users (teachers), to some extent.
- the involvement of indirect users (education policy makers, ODL and ICT experts, teachers training experts, decision makers etc.), by interviews and discussion panels/ workshops.

The user needs, as expressed by the end users, can be classified in two areas: The first area contains needs expressed by those that have little or no experience in the use of modern telematic technologies for the improvement of the educational process. The second area contains more detailed needs, expressed by those that understand the possibilities offered by the use of telematic technologies. Following are, in brief, unified the needs that were determined:

- Acquaintance with the various tools offered by ICT and how these can be uniformly and readily used in order to improve the overall quality of the learning process.
- Creation of interdisciplinary courses on a national or international basis.
- Personal communications among teachers, school administrators, curriculum experts, in order to exchange ideas, information, plans, techniques, concerning the educational process.
- Nearly all countries, with only slight variations, have exhibited the need for additional scientific knowledge pertaining to particular subject matter. This knowledge ought to either fill in ascertained gaps in the initial training of teachers or contribute to their further education on the subjects they teach.

- Participation in discussion fora dealing with educational issues, so as to exchange information / opinions on educational matters with their trainers and their colleagues all over the world.
- The need for further education and update of teachers on the new didactic methodologies which are developed and applied to each subject matter, is deemed imperative. The aim is to familiarize teachers with these methodologies and their contribution in the learning / teaching process with particular emphasis placed on those which help in solving special problems that teachers face in the school.
- Access to resources containing educational material (e.g. Internet's WWW).
- Transfer or exchange of educational material between teachers all over the world.
- Access to services offered by already established educational networks, so as to exploit already existing and evaluated resources.

(User Requirements Specification, TRENDS, July 1996 / Bouras, Lampsas & Spirakis, 1996)

6.3. Definition of learning scenarios

According to the users' requirements, as detected in the previous stage, a training system was developed to address the needs of the school teachers to develop (or even upgrade) their skills in the use of IT for educational purposes. Within the context of this European training model, the telematics based services may be customised to serve the requirements of distance learning scenarios for particular target groups. The foreseen training (demonstration phase) on the 'use of IT in the learning process' is aimed at supporting the teachers of Secondary Education to incorporate the newly available learning resources in the curriculum and in the everyday learning process. For the needs of the pilot phase training of teachers, there will be a common layout of the course, adapting and integrating already available material. Alternative solutions in terms of technical infrastructure available in each country will be considered while designing the national sites.

TRENDS Training Model consists in the combination of the following three ODL scenarios:

The virtual classroom

The different ICT media that support ODL permit the real classroom (with its place and time restrictions) to be replaced by the virtual classroom. In this scenario ODL is mainly teacher-centred; nevertheless, like in the real class, students' questions and comments are very important to clarify some concepts.

In a virtual classroom the learning material can be created and adapted to students' needs and interests, since the teacher is the main transmitter of contents. The teacher is not necessarily always the tutor or trainer. He/she can be an expert or a team of experts on the subject taught. This would confer a high added value on ODL, since it allows to touch a wide range of educational subjects and, if necessary, at different levels (basic/advanced).

This learning scenario demands from the tutor the development of new strategies in carrying out his/her tutorial support. If a real interactivity between tutor and learners is to be achieved, the tutor not only has to facilitate the required information, but also motivate the learners and develop positive attitudes which would later allow the introduction of new working performances and new professional behaviours.

Since learners are not normally familiarised with the use of networks and the on-line technologies used in a virtual classroom, they may find difficult to express their comments and contributions in a spontaneous way. In these situations the role of the trainer, both as a group animator and network specialist, is vital.
Regardless of the technological options used in the virtual classroom, the tutor is continually able to evaluate and check each learner's performance and achievements through the different exercises, activities, practices and tasks proposed.

Supported self-learning

The basic methodological principle of distance education is self-learning or autoinstruction, which means that the learner is at the same time the agent and the end-user of the training. But, thanks to ICT, it is no longer a lonely or solitary autoinstruction, it is self-learning supported by the different elements of the ODL system, that is, the self-learning material, the self-evaluation instruments and the tutorial support.

The self-learning material usually offered to the trainees of the traditional ODL systems is printed material, while ICT allows most of self- learning material to be available on-line. Hence, ITC allows trainees to be the real agents of their learning process, since this new self-learning material facilitates interactivity, allowing the trainees not only to reach different levels of deepening, but also to create their individualised learning path. Likewise, ITC also allows more diversified, complex and relevant self-evaluation instruments.

The tutorial support system is also improved thanks to ICT, mainly because of the improvement of communications. ITC facilitates a fast and easy communication process between trainers and trainees, therefore reinforces both the learner's motivation and self-learning process, since it avoids the long time gaps produced in the traditional ODL system.

Collaborative learning

The last pedagogical studies point out the importance of collaborative learning in the teaching-learning process. The use and application of ICT to the learning process allows the realisation of this scenario in ODL.

Nowadays, the new technologies have made a horizontal communication flow possible. The learners are able to exchange information and experiences in real or not real time, as well as to carry out common project work for both learning and operational purposes.

This dynamic communication flow will take one-to-one, one-to-many and/or many-to-many form. Each participant will be able to send his/her own messages and read or answer other participants' messages. From this point of view, dialogues or discussion

fora will arise; and when considered necessary, the trainer can play the role of a moderator, maintaining the discussion, suggesting new subject matters, selecting the messages or the joining of new participants.

The choice between the three scenarios is led by the appropriateness of the different scenarios for different learning objectives and contents. The following matrix gives an idea of how these design principles can be implemented:

Learning scenarios - Implementation Modalities

SCENARIOS	TYPOLOGIES OF TRAINING MODEL	LEARNING IMPLEMENTATION MODALITIES	TRAINING FEATURES
VIRTUAL CLASSROOM	• teacher-centred • questions, statements, contribution from learners	• knowledge transmission by the teacher • possible integration with other active learning methods	• high value-added inputs (e.g. excellent lecturers) • support to motivation and creation of positive attitudes, to introduce new working performances and new professional behaviour
SUPPORTED SELF-LEARNING	• learner-centred • knowledge acquisition by learners • tutoring	• modular course • individualisation of learning paths • counselling and support by a tutor • working environment: school or home	• basic knowledge • deepening of special domains
COLLABORATIVE LEARNING	• group-centred (teachers and when required with students) • dynamic communication between centre and periphery and vice-versa and among peripheral points • anchorman	• horizontal communication flow: one-to-one, one-to-many, many-to-many • network animation	• sharing of information and experiences through learning technology applications in education • possibly, development of common projects (among teachers and when required teachers and students)

TRENDS will facilitate a training system which would allow the teachers to:

- learn according to their needs in an ODL environment,
- search information related to their own training and teaching tasks,
- exchange information with different members of the educational community,

Therefore, the main idea is to propose a set of telematic-based teachers training to the educational community. This would allow the projected in-service distance training, and at the same time would open a wide range of possibilities of exchanging information, work and experiences among European teachers and even students.

The TRENDS model will make use of all three ODL scenarios in order to let teachers experiment with them as learners. This is important if we want them to make effective use of these scenarios within the course of their training activities.

(Training Model, TRENDS, February 1997)

6.4. Specification of training services

In the context of the previously described training model and in order to meet the expressed by the end users of the TRENDS project requirements, the following services will be offered:

1. Interpersonal communication services. These will include the following:

- Off-line contact with a trainer. This service will offer educators the ability to register questions concerning the material studied by them. The trainers will be able to answer them and clarify any difficult points. This service will be implemented by employing the already existing network services, such as contact through electronic mail (e-mail) with other educators and trainers. The e-mail service, which will be enhanced by supporting multiple data formats (multimedia support), offers a fast path for the exchange of messages with other colleagues participating in the TRENDS project, as well as personal contact with the trainer.
- Access to multimedia information. Widely known Internet technologies will be used for implementing the access to multimedia information as well as for storing and making available the information that the TRENDS project will produce.
- Fora for the discussion and debate on educational subjects. These fora will exist in the form of news groups to which educators can participate. Also the newsgroups can offer to the educators fast updates on new developments on educational subjects and policies adopted in each of the participating countries. The TRENDS project will produce its own fora for discussion and debate on subject matters mainly concerning the audience of the TRENDS project.
- Access to curriculum-related information for the trainers and the educators. This will be accomplished by having access to other educational networks through the interconnections of the educational network of the TRENDS project to already existing educational networks. This will facilitate the introduction of ICT in the educational process by enabling teachers make use of already existing educational material and sharing experiences on similar approaches currently in use.

2. Multimedia tele-training tool. This tool will allow the on-line delivery of remote training sessions from the trainer to the teachers. A training session offers both the trainers and the teachers the following services:

- Preparation of the training session. This service will allow the trainers to prepare training material that can contain multimedia information and which will make the training sessions more attractive to the educators to be trained. In this way the immersion of the trainees is more complete and results to the better understanding of the material. The trainers will be able to customize the material they want to use in the training sessions, thus making them more effective and will also be able to easily update and reuse it.
- Participation in a lesson. The educators will be able to declare their interest in participating in the currently available sessions by registration. Also they will be able to join an already started training session at any time.
- Distribution of the material for the training session. The material for the training session will be distributed, in an automatic way, to the educators that will have registered their interest in participating in the session. This way the material will reside in the educators' workspace and will be available to them for later review.
- Co-ordination of the training session. This service will enable the trainers to actively control the flow of the training session, speeding it up or slowing it down, so as to accommodate the better understanding of the material by the educators participating in it. It will also offer the ability to the educators to register questions concerning the material used in the training session and the trainer will be able to answer them on line, thus aiding the clarification of difficult points.
- Review of the training session's material. The educators that have participated in a training session will be able to review the material used in it, at a later or earlier, than the session, time. In this way the educators will be able to prepare for the training session or to go over some of the material after the training session so as to achieve a better understanding.

(Bouras, Lampsas & Spirakis, 1996)

In order to facilitate the allocation of service resource requirements within every learning scenario, a useful definition of services from the technology viewpoint is a classification depending on real-time requirements or not, abstracting from which is the learning scenario where the corresponding services are included. This classification is shown below, as well as examples on how the same requirement (real-time or not real-time speaking) applies to different services belonging to different learning scenarii:

- No real-time requirements. This could apply to the 2nd and 3rd learning scenarii (learner and group-based, respectively). Nevertheless, the assessment of pupils is something that could be also carried out with no real-time requirements within the 1st learning scenario (teacher-based, virtual classroom), or to the 3rd one in the case of group-work (non cooperative work).
- Real-time for information downloading, non real-time for other purposes (i.e., play a classroom session previously recorded and stored in the training servers). This could apply to the 2nd learning scenario, because the teacher is not available for real-time questions and answers. Teletutoring must be delivered in non real-time. It could also apply to the 3rd learning scenario, since a working group does not need real-time

interaction in order to learn, while some given and specific information could be required in real-time for everybody. In a minor way, it could also apply to the 1st learning scenario, since the assessment of the pupils could be carried out by means of contributions sent by them to the teacher, and these contributions could be produced out of the class session and sent later to the teacher, who will send the marks to the pupils also out of the class session.

- Real-time for all purposes. This applies somehow to the 1st learning scenario, with the exception mentioned in the previous items. It could also apply to the 3rd scenario, in exchanging videoconference among all the participants in cooperative work.

As a conclusion from the above list, it can be dropped that a given learning scenario is not the variable to be taken into account to define the ICT resources required, but the different facilities and services defined within every scenario. Furthermore, not all those facilities and/or services can be provided in all places. Hence, the variable which must be considered in order for one to decide on ICT resources required is really the per site/operator customisation regarding facilities and services offered within the different scenarii.

These services address varying, at national level, needs and requirements of the educator's profile and imply different levels of interactivity. To keep the homogeneity of the user services and delivery platform, a demonstrator will be built for each one of the services under a common Graphical User Interface (GUI). The common GUI will be customised at national level according to the local technical specifications (sw and hw configuration, language, etc.).

The development of services implies design of the system architecture (client + server), design, implementation and testing of client and server software (with registration and administration/supervision modules) and the preparation of the accompanying manual. In each of the 120 schools a client software will be installed. In such a way a significantly large number of European school teachers will be given the capacity to access valuable information available in the cyberspace, with a friendly and time efficient way, and to participate in teletraining courses as well as in interactive work sessions. The national site configuration consists of the following:

- The Training Centre, in which the various servers that facilitate the provision of the TRENDS services are located. Concerning information providers, some of the TRENDS partners as well as the sponsoring partners (Ministries) will provide multimedia information (courses) in different servers. This configuration is compatible with the model of the strongest network operators, although its implementation may differ depending on interests.
- The schools that are connected to the Training Centre of their country. There, the necessary client software to access the services offered by the TRENDS Network, will be installed.

(Training Model, TRENDS, February 1997 / Functional Specifications, TRENDS, November 1996)

6.5. Evaluation of existing media/tools

As already discussed above, the TRENDS network is designed to offer several services in a user-friendly and efficient way. These services can be implemented through the use and integration of various tools. The evaluation of commercial clients for the TRENDS training services, that should be provided at the client side, is generally based on the functionalities they provide, their flexibility, the technical support, and the standards and protocols that they conform to. The user interface they provide is a critical aspect that is also considered.

The basic training services to be implemented by specially-selected tools are:

WWW Access Service. The client to provide this service will be selected for the functionalities that provides. These will be the basic ones (access via HTTP, FTP, etc.) as well as integration and ability of embedding information such as audio, video, images in various formats. In order to evaluate a software package such as a browser, its flexibility to adapt in the rapidly changing environment of the WWW should be measured. Thus, the product should have the ability to be continuously updated and upgraded. The speed factor is another parameter to be evaluated even though it isn't as significant as the latter. Keeping all these in mind, the expectations and the needs that the product should fulfill are stated below: The browser is intended to be used by non-experienced users. This is a very important reason to search for a browser that is easy to use and handle.The browser should be up to date with all the latest developments in the fields of HTML. It should support all the basic multimedia formats, tables, frames and generally it should be able to embed all types of information that the World Wide Web is able to handle. The browser should give the means to control the flow of information that it handles. The security aspect is another point that should be kept in mind because of the public nature of the network.The evaluated products are intended to be used under an integrated Graphical User Interface which will meet the services' needs. That is the reason why the browser should provide a customisable interface that can be altered in accordance to those needs. The browser should support remote administration facilities. The browser should be supported in case some kind of problem comes up.

E-mail Service. It should be provided by a widely accepted e-mail client that will comply with international recommendations for transferring messages. It should encompass elementary facilities such as reply to, submission of a message to one or more recipients, administration of incoming messages. Extensions made in the variety of services will concern the use of aliases instead of typical e-mail addresses, support of distribution lists and special interest groups, search for recipients with various criteria and more. Therefore, selection among different products is based on the friendliness towards the user, the wide range of functionalities and mostly on the specific requirements -as stated in the introduction- that an e-mail client should have.

News/Bulletin Board Service. The client selected to provide this service will support subscription to existing newsgroups and discussion lists, automatic notification of new messages, posting of messages to newsgroups, creation of newsgroups or discussion lists and more. These will consist an electronic fora and discussion on educational topics. In the evaluation of Newsgroups clients, the most decisive factors are the range of features supported by the client, functionality by the interface, handling of attachments,

encoding/decoding protocols included and the specific requirements from an educational environment's Newsgroups client. Complicated, professional clients as well as those restricted in services, though widely approved products, are not favoured in this particular evaluation.

Telnet Service. This service (which allows the user to connect to a remote computer in the network) should be implemented by the Telnet Client in the basic services environment, mainly for access to remote libraries which do not support a specialized way for accessing them. The criteria for selecting among a large amount of Telnet clients the appropriate to use in the basic services environment, are the friendliness of the interface towards the user and simplicity. Since the service of Telnet sessions is needed in specific and limited occasions (e.g. for access to remote libraries which do not provide a specialised way for accessing them), the requirements are equivalently limited.

FTP Service. It is required for the user of the network to be able to transfer files between a remote computer and his/her own one. This functionality should be provided by an FTP client. The client that will be used in the TRENDS network must have some special features. It must be easy to use, which means that it must not require special knowledge of the mechanism used for file transfer. It should be able to scan and index Web or FTP sites in order for someone to be able to access the specific information that he/she needs.

Talk/Chat & IRC Services. In order to establish on-line communication within the network, a Talk/Chat client should be used, enabling the user with real-time exchange of plain text. The requirements that these software packages must meet are: User-friendliness, appealing interface, bandwidth requirements.

Authoring Service. The Authoring Service may be fulfilled via a What You See Is What You Get (WYSIWYG) HTML Editor. That is an editor in which the user can easily create HTML pages without knowing the exact syntax of HTML.

Teletraining Service. There is a set of functionalities that the teletraining service must provide for both the trainer and the trainees. This set of functionalities should be able to implement the following teletraining needs of the teletraining session participants: Automatic lesson advertisement, automatic registration of trainees, distribution of the material for the training session, preparation of a training session by the trainer, participation in a lesson, slides presentation by the trainer, feedback from the trainees to the trainer through text based-chat service, audio and video communication between the trainer and trainees, control over the flow and co-ordination of the training session by the trainer. In terms of software products the above functionalities may be related with certain applications. These applications realise the exchange of chat messages by means of a chatboard, the presentation of slides by means of a whiteboard or application sharing and collaboration on educational material by means of application sharing. The issue of teletraining over computer networks is currently approached by a number of software products that focus either on collaborative work based on data conferencing or on audio/video conferencing. In order to fulfil all the requirements of the teletraining service, there must be a combination of software from these two categories.

(The Client Package, TRENDS, June 1996)

7. Accreditation of distance education programmes for teachers' in-service training in EU countries

7.1. Accreditation of EU distance education programmes for teachers' in-service training

It is expected that in the future the in-service training experience acquired through being involved in EEPs and the participation in Comenius, Action 3 courses will be accredited so that those activities become part of the professional career of the teacher and part of his or her lifelong learning plan. By doing so APEL, or Assessment of Prior Experiential learning, will be linked to the teaching career and could even lead to acquire a new degree or could lead to possible promotion of teachers towards senior staff jobs or jobs which require specific skills and competencies which they have acquired through European Co-operation work within SOCRATES in general and within Comenius and Lingua in particular. In-service training through EEP activities could (and should) also become elements which could lead to European masters degree in education of which some of the modules could be based on the experience acquired through EEP work. (Beernaert, 1997).

In SOCRATES Programme (Horizontal Measures, Action 2: Open and distance learning), the following objective of European Partnerships Projects is stated:

> *Encouraging the recognition of qualifications obtained through open and distance learning services. (Appraisal of experience with various models of co-operation, within a given country or in a transnational context, between 'conventional' educational institutions and those providing ODL-based qualifications; analysis of systems for the validation, quality assurance and recognition of qualifications acquired via ODL, including multimedia learning systems; analysis and development of models for improving academic recognition arrangements between ODL-based institutions in different participating countries.)*
>
> (European Commission, DG XXII - Education, Training and Youth, SOCRATES, Guidelines for Applicants 1997, July 1996, p. 68)

7.2. Accreditation of national/regional distance education programmes for teachers' in-service training

In national programmes for teachers' in-service training, assessment of teachers (other than in qualifying training schemes) poses something of a problem. It is difficult to associate voluntary participation with assessment if this term implies testing. The essential evaluation is therefore self-assessment, formal attestation taking the form of a certificate of attendance and participation. Sometimes a questionnaire allows the participants to gauge what they have gained from the training sessions in relation to their initial expectations. In Portugal, however, the assessment of teachers following the course is the responsibility of the training institution which must ensure individual

assessment of the usefulness of the training undertaken. (Eurydice, In-service Training of Teachers in the European Union and the EFTA/EEA Countries, 1995, p. 31)

It is generally non-university institutions which provide in-service training. This fact should be stressed, since the currently trend is to provide initial teacher training in universities. The emphasis on the professional dimension of in-service training is interesting, but gives rise to the problem of the academic recognition of this type of training. (Eurydice, In-Service Training of Teachers in the European Union and the EFTA/EEA Countries, 1995, p. 12)

7.3. Current problems, suggestions and perspectives

The main issues arising from the current situation in accreditation in teachers' in-service training using distance education seem to be the following:

- Assessment procedures.
- Standards and qualifications.
- Recognition.

First of all, there is a need for establishment and elaboration of assessment methods and procedures in teachers' in-service training using distance education. In general, assessment in distance education is not a simple issue to deal with, since the interaction between tutor and learners usually takes place in a 'virtual' environment. On the other hand, we should not forget that in open distance learning self-assessment is promoted more than assessment by the tutor. The learner is expected to be responsible for his learning and make decisions concerning the learning method, the pace of learning and, often, the assessment procedure. Finally, teachers' assessment should be distinguished from teachers' appraisal, since teachers are to be assessed as learners and not as professionals at work. This kind of assessment could take many forms and it should not be restricted to formal testing. We should bear in mind that teachers are trained in order to improve the conditions of learning in schools. Therefore, what needs to be evaluated is changes in attitudes and skills on the job. Formal testing proves to be an inadequate assessment tool when people are required to transfer new knowledge, skills and attitudes to their everyday life and work. More flexible, illuminative and idiographic methods and tools are needed, based on self-assessment, peer-assessment, group-discussions, action research, retrospective critical incidents analysis (diaries, observations etc.).

Secondly, accreditation is closely related to standards and qualifications. Teachers seek and participate in in-service training for several reasons. One of these reasons seems to be the qualification they can gain. It is essential that this qualification takes the form of a certificate or credit/s or something relevant. It could be claimed that certification should be based on a set of standards. Of course, it could take the form of a mere certificate of participation, specifying the type of skills acquired by the participants. However, there are always standards in any training programme, even when they are not explicit and clear. If, for example, on-going participation and active involvement are considered to be expected outcomes of a training programme, a certificate of participation in the programme would be satisfactory. In other words, the underlying expectations and standards dictate the accreditation procedures. Since in-service training is very often

based on voluntary participation, the main expectation proves to be active involvement in training. This is understandable but it does not provide solutions to all kinds of in-service training programmes.

Thirdly, recognition of in-service training proves to be a crucial issue at national as well as european level. As it has already been suggested, this type of training is usually decentralised. Consequently, there are no standard, common assessment and accreditation procedures. Additionally, it is very often led by non-university institutions, thus it generally lacks academic recognition. Finally, european projects focusing on teachers' in-service training attract more and more teachers all over Europe. This 'trend' poses the question of recognition of teachers' in-service training at european level. All things considered, there is an emerging need for the creation of a common basis for recognition of teachers' in-service training at national and european level at the same time. School-based research is a field which can be shared with acedemic institutions in the future, providing the basis for 'open' forms of postgraduate studies in education (leading to postgraduate degrees).

8. Development of juridical basis for teachers' in-service training in EU countries

8.1. Existing juridical framework for teachers' in-service training in EU countries: Inadequacies and problems

Although the authority ultimately responsible for in-service training often remains a Ministry or official council, there is, nonetheless a tendency to take account of the needs at grass-roots level and to proceed with decentralized planning of in-service training. Since in-service training is an essential channel for communicating national education policies, the Ministries generally define its conceptual framework. Decentralization is the strongest trend, but the degree and level of decentralization - at regional, provincial, local authority or school level - varies considerably.

In certain Member States (Belgium and Italy), the levels of decentralization in the different public and private networks of the state and the Provinces complicate analysis of decentralization by region/province/local authority. In Member States with a federal structure or autonomous regions, information must be collected at the level of each province or Land, and the variety of situations makes it impossible to synthesize these data. In the most decentralized countries, such as Denmark, efforts are being made to introduce a common framework to permit a degree of coordination of the different training bodies.

All the Members State provide in-service training in specialized establishments, sometimes those which also provide initial training. It is generally non-university institutions which provide in-service training. This fact should be stressed, since the currently trend is to provide initial teacher training in universities. The emphasis on the professional dimension of in-service training is interesting, but gives rise to the problem of the academic recognition of this type of training.

Some Member States allow training to take place during school time, but not as a general rule; others have opted for compulsory training sessions lasting several days (Ireland, Portugal, Finland, Sweden, Scotland, Norway) or have made training at one-day teaching conferences compulsory (Belgium, France). Some Member States take a more flexible approach, with compulsory training only when needed (Luxembourg, Austria). All provide opportunities for voluntary in-service training during free time. When we consider that the compulsory or voluntary nature of training varies according to the organizers of the training courses, the level of education in question, the statutory category to which the teachers involved belong, the type of training (duration and subject), we begin to understand why it is difficult to form a clear and complete picture of the organization of in-service training.

(Eurydice, In-Service Training of Teachers in the European Union and the EFTA/EEA Countries, 1995, p. 12)

The legislation framework for the provision of in-service training, is usually recent in the majority of the EU countries. Even in the cases where in-service training has been introduced for long periods, the regulation of teachers' training services as part of the

centralised or decentralised national education systems, provided under the guidance of Ministries and official agencies, has been recently organised. Legislation appears in many and varied forms, e.g. decrees, laws, orders, circulars, ministerial decisions, etc. The legislative framework does not always define clearly the operational framework of in-service training; in most cases the legislative framework outlines objectives and organisational methods in such a way as to permit the adaptation of teachers' training to changing needs and demands. From examination of the texts, it appears that on the one hand the legislation does not always clearly define the outlines of in-service training and on the other hand that this training is still too much subject to change for it to be defined in precise terms.

8.2. New trends, perspectives and suggestions

It seems that, in the future, legislation in the EU countries should particularly consider the following issues:

- the emerging need for 'informal' on-going professional development rather than compulsory, formal teachers' training.
- the current trend towards collaboration of several institutions of the public sector and the private sector (business) as well as the co-operation of several European countries in training.
- the decentralisation of teachers' in-service training in accordance with local needs and plans.

First of all, the teacher needs to be supported in his/her effort for continuous professionalisation. This presupposes policies which allow and encourage self-learning at work. The issue of free time that can be devoted to self-learning or training is strongly linked with school schedules, teachers' working hours, workload etc. Another crucial issue proves to be the availability/accessibility of resources at school and what the legislative framework suggests as to the economic aspect of the issue (e.g. telecommunications costs). Issues of accreditation, recognition and promotion/career could be also considered in legislation.

Secondly, the current trend for collaboration, establishment of training networks and synergies among several institutions and several countries cannot be ignored in future legislation. On the one hand, the private sector is gradually getting involved in teachers' training. On the other hand, trans-national programmes and projects are under development, placing emphasis on school and training networks. Legislation of EU Member States is called to respond to these developments and initiatives very soon.

Finally, the decentralisation of teachers' in-service training calls for the development of a legislative framework which will allow and support local initiatives but also make sure that all these training programmes can essentially contribute to national curriculum development and add to the european dimension of school education in the EU countries.

9. Prognoses for the further development of teachers' in-service training using distance education in EU countries

9.1. ODL in the future

The organization of education as we now know it, will continue; society will demand common standards and legitimization at the same time that society demands life-long learning and competence among its citizens in terms of universal access to interconnectivity for learning purposes. This contradiction will cause great tensions. (Collis, 1996, p. 585). On the one hand, there will still be traditional courses, based on well-structured content, competent instructor and clear goals, combining elements of tele-learning (virtual classroom/tele-presence/tele-tutoring) with face-to-face sessions and individual study. On the other hand, there will be a 'just-in-time' support model, which encourages the learner to stay at his place and is based on his/her individual learning needs, providing access to appropriate resources to help him/her with his problem (persons or learning materials or examples or computer-based tutorials). The structured course will appeal to people who need structure and motivation, institutional credit/legitimization, opportunities to clear away daily distractions (work, family etc.) and interact with a group of fellow-students. The 'just-in-time' approach is an on-going activity for updating one's self as to new developments, non-disruptive communication with other colleagues, targeted questions, hints and motivation, over-specialization - since it is difficult to find a single course or instructor appropriate for very specific professional issues. (Collis, 1996, p. 571)

Tele-learning, connecting to resources and people via telecommunications, will be an important instrument of a new paradigm of educational organization and of a new social conception of learning, in ways similar to the paradigm shifts accompanying the printing press and the popularization of books some centuries before. (Collis, 1996, p. 577). Virtual communities will be developed to complement face-to-face relationships in learning, and there will be an increasing use of 'knowledge utilities' particularly through the WWW, to complement the textbook and the teacher as major information sources. (Collis, 1996, p. 566). Advances in technology - distribution technologies, user-access platforms and client-server architectures - will make it possible for tele-learners to use the same 'learn-station' for both real-time and asynchronous interactions and for their choice of combinations of text, video, sound and graphics. This learn-station will be affordable and portable because it will primarily function as a client or network computer, downloading temporarily what it needs locally but mainly working from network resources. (Collis, 1996, p. 545)

Open Distance Learning is in some respects independent of national boundaries and this can contribute to the enlargement of the potential market and thus assist economies of scale. The quality of ODL provision can gain appreciably from a sharing of expertise and a pooling or licensing of resources as between institutions, enterprises, networks and Member States. (Commission of the European Communities, Memorandum on Open Distance Learning in the European Community, 12 November 1991, p. 12-13).

All things considered, the interactive nature of new technology opens up significantly possibilities, whether in the traditional sense 'at a distance' or 'on site' or in combining

both modes of delivery. There is a need to develop new models of open and distance learning. Existing institutional structures must adapt. Reconceptualised systems of assessment, portfolio working and profiling need incorporation. New expertise is required to develop the changing technologies. In this it appears crucial that integrated teams comprising expertise in open and distance learning, new technologies and teacher education need putting in place. There are specific challenges and issues that will need to be addressed in future development work. As technology facilitates the promotion of international forms of co-operation, the language of communication will become an increasingly problematic issue. The architecture of the new systems for electronic information and communication needs to have common elements, flexible forms and structures that avoid, in creating new virtual communities, the sorts of frontiers and institutional barriers that have bedevilled interchange in the twentieth century. (Moon, 1996)

9.2. EU initiatives and plans for teachers' training

The need for training and retraining will increase substantially in Europe in the coming decade. In qualitative terms around five million of initial training actions in the coming three years and about 130 million retraining actions spread over the next 10 years are forecasted for Europe. This demands a serious rethinking of education and training concepts. The use of telematics for education and training will play an important role in coping with this huge demand for training. In Europe the installation of telematic learning infrastructures is a fact and opening the market. Interactivity and communication in collaborative learning approaches; telepresence of tutors and learners; virtual libraries and laboratories; remote design and production, etc. are still in an experimental stage and problems of interoperability, copyright, reusability of learning materials within different cultures are yet unsolved. (Jansen in Jansen & Mavridis, 1995)

Among the areas of education/training provision in which Open Distance Learning can play a highly significant role in Europe in the future is identified: making available a European dimension in the education/training of these who do not have the opportunity to spend a period of study abroad and, in particular, providing such a dimension in the in-service training of teachers; (Commission of the European Communities, Memorandum on Open Distance Learning in the European Community, 12 November 1991, p. 7).

The development of open and distance education, therefore, has the potential for transforming the education of teachers. There is a sense of excitement in the field. Across very different countries and contexts there are many common features to the unfolding agenda. The next few years, into the new millennium, represents an important opportunity for rethinking and redirecting open and distance forms of organisation. International co-operation, collaboration and the sharing of experience will be a crucial element in this process. (Moon, 1996)

9.3. The changing role of the teacher and in-service training using distance education

Being an effective teacher in a tele-learning world will require skill and insight into linking: linking of persons, of ideas, of concepts, and of helping one's students, and one's self, see an idea or person as part of a web whose boundaries are continually changing, and whose attributes vary depending on one's vantage point. (Collis, 1996, p. 585)

The difference between teacher of the future and teacher of the present could be presented as follows: The first one will increasingly be someone we select via tele-learning experiences, as good for us, both in terms of what we feel we need, content wise and subjectively. Less and less will the learner be consigned to a teacher he does not want to work with; more and more a market will develop from which one can choose one's mentor, interpreter, learning guide. (Collis, 1996, p. 584)

Under these circumstances, teachers face the greatest challenge. They are critical to the successful transformation of teaching and learning. But their new role would be quite different from the old, complex, and difficult, with the teacher becoming navigator and manager of learning. The professional development of teachers to tackle this new 'challenge' is widely seen as a priority. In-service training is expected to play a key-role in the continuous upgrading of teachers' abilities and the development of new teaching skills. Distance education can support such training, providing an 'open' environment which allows selfl-learning and self-development in combination with expert-support and peer-collaboration.

9.4. The vision of a European Virtual Teacher College

In this context, the vision of a European Virtual Teacher College, as described by Ylva Johansson (Minister for School and Adult Education of Sweden), seems to be a challenging and realistic plan for the future.

A European Virtual Teachers' College for professional development, evaluation and research could be established, in order to provide an experimental laboratory and a professional development centre. Within it, new products would be developed for teachers in training as well as teachers who are updating and reskilling in the areas of ICT. Also, it would be a space in which teachers and teacher trainers engage in observation, reflection and discussion about improving schools. The EVTC could create study modules for skills and content for upskilling and updating teachers at all levels; these could be placed in a data bank for continuous professional development. The EVTC could also operate at different levels of research and development.

The activities of the Teachers' College could include the following:

- transnational multilingual professional environment in which cross-European discussions and lectures would be organised on specific projects.
- a virtual amphitheatre to allow guest speakers to talk about professional formation, innovative schools and the impact of ICT across the curriculum.
- pedagogic resources such as an electronic journal for key discussion papers based upon the practices of the innovative schools and other developments in the education

system and a multimedia handbook - incorporating case studies of innovative schools in different national contexts and transnational studies of trends in professional formation.

The European Virtual Teachers' College could be based on teachers as action researchers and on the development of new forms of contacts and relations between teachers (and pupils), teacher trainers and researchers.

('Towards a European Schoolnet', Interim Report presented by Ylva Johansson, Minister for School and Adult Education, Sweden, to the Informal Education Council in Amsterdam, 2/3/97, pp 21-22)

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TRENDS

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In-service Teacher Education in Europe: conditions and themes for development in the 21st century

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ABSTRACT This article highlights four themes which focus upon the roles of higher education in the development of transitional research into the continuing professional development of teachers. The first theme examines the contexts and conditions for teacher development over a career span. The second theme looks at what research tells us about the variables which affect professional learning and development, and the limitations of current approaches. Theme three is critical of rational research planning models which result in ineffective dissemination and utilisation. It suggests that more attention needs to be paid by researchers to issues of ownership, participation and equity. Theme four proposes that researchers need to revisit their own purposes, roles, responsibilities and accountabilities in order to move closer to those communities whose needs they seek to serve. Finally, the article suggests 'sustained flexibility' as a means of establishing and building more effective networks for learning and development.

Historically, there has been little attempt in any European country to establish systemic career-long differentiated support for the continuing professional development (CPD) of teachers. An examination of the contents of the 1994 *European Yearbook of Comparative Studies in Teacher Education* (Sander, 1994) indicates that in all 21 countries represented the emphasis in resource terms was on initial teacher training. In-service – which is a part of CPD but not the whole – was voluntary (Austria); was not coordinated (Denmark, Italy, Spain); was not conceptualised (Belgium, France, Netherlands); or was top-down, short course dominated (Portugal, United Kingdom). Whilst many countries were moving towards school-based in-service education and training (INSET) (cheaper and apparently more cost-effective), there was no evidence of any systematic evaluation of the benefits of the use of particular models, nor any

acknowledgement that learning involves change (of thinking and/or practice) and that this often needs support. Attempts both at local and national levels to provide INSET support for the CPD needs of teachers and schools are rarely conceptualised beyond the rhetoric of statements such as 'They should result in improvement'. In England and Wales, a government quango, the Teacher Training Agency (TTA) is developing a national system of targeted funding for certain categories of teacher (e.g. subject leaders, 'expert' teachers, and headteachers), but with no explicit consideration of effective learning models, or long-term intellectual and professional development needs of individual teachers.

Theme 1. In-service Research Contexts: conditions for lifelong learning

There is, as yet, little acknowledgement in research on the effectiveness of in-service education of the importance played by teachers' life histories, situated lives (within the culture of the school) and personal circumstances and motivations. Yet research tells us that if *continuing* professional development is to be effective, it must extend beyond the immediate needs of school and classroom practice, such that support for the personal and long-term professional needs of the teacher is legitimated. Interest in *teachers'* professional lives and careers increased during the 1980s, in several countries: in the United Kingdom (Ball & Goodson, 1985; Sikes et al, 1985; Nias, 1989); in the USA (Lightfoot, 1983); in Australia (Ingvarson & Greenway, 1984; Maclean, 1992); in Canada (Butt, 1984) and in Switzerland (Huberman, 1989). There are now several accounts of what a trajectory of career development as distinct from professional growth looks like for a teacher. Without a clear conception of what this 'growth' might look like it is difficult to determine a path for professional development. Until recently, much of the language used by teacher educators, managers, and policy-makers and researchers, suggests that professional development is a linear continuum, and labels are ascribed to different stages. We enter the profession as students (as members of an institution outside the school system itself); we then achieve newly qualified teacher status, before being accepted fully as teachers and moving on to become veterans (Peterson, 1990). A number of key phases have been identified through which many teachers have been perceived as moving in their careers. For example, in the United Kingdom Bolam (1990, p. 153) identified five 'job' stages: the preparatory stage; the appointment stage; the induction stage; the in-service stage (i.e. 3-5 years, 6-10 years, 11 years in post); and the transitional stage (i.e. promotion, redeployment, retirement). He reminds us that needs of individuals will vary according to these and other factors, e.g. age, gender, school type. Elsewhere, Kremer-Hayon & Fessler (1991) posited nine career cycle stages: pre-service; induction; competency; building; enthusiasm and growth; career frustration; stability and stagnation; career wind-down; career exit. There is much literature also which conceptualises

professionals, such as nurses, as moving through a number of non-age-related skill development stages from 'novice' through to 'advanced beginner', 'competent', 'proficient' and 'expert' (Dreyfus & Dreyfus, 1986).

Whilst idiographic and longitudinal studies have found that adults pass through different stages of learning, we do so in different ways at different times according to different circumstances. Some suggest that these are in response to predictable events (Levinson et al, 1978), others that there are different and distinctive stages of cognitive development (Oja, 1989), whilst others focus upon career (Huberman, 1989) and life cycle factors (Ball & Goodson, 1985). Teacher educators and researchers have sought to apply these findings to teachers' careers (Newman et al, 1980; Christensen et al, 1983; Fessler, 1985) and many have identified special learning times in teachers' career and life histories (Sikes et al, 1985; Ball & Goodson, 1985; Shulman, 1987; Huberman, 1989; Oja, 1989; Gudmundsdottir, 1990; Leithwood, 1990; Denicolo & Pope, 1990; Eraut, 1991; Goodson, 1992). These have been variously described as 'critical incidents', 'dilemmas', 'landmark' or key events in an individual's life, around which pivotal decisions revolve. They provoke the individual into 'selecting particular kinds of actions, which lead in particular directions' (Sikes et al, 1985, p. 57). These critical phases in a teacher's professional biography represent "the culmination of a decision-making process, crystallising the individual's thinking, rather than being responsible ... (of themselves) ... for that decision" (Sikes et al, 1985, p. 58). It may be, therefore, that conceptualisations of professional development as cyclical or as a linear continuum, though superficially attractive and plausible, are both oversimplistic and impractical since they are not based on a teacher-as-person perspective but on a systems, managerial perspective of 'teacher as employee'. An adherence to them might tend to oversimplify or skew in-service provision towards meeting the needs of the system whilst ignoring, at their peril, the needs of the teacher within it.

In developing transnational research it is important, therefore, to conceptualise professional development as multidimensional, a dynamic interplay between different teachers' stages of biographical and situated experience, environmental factors, career, life, and lifelong learning phases. In-service education and training provide one means of planned intervention to accelerate growth, but should, ideally, take account of critical moments in this interplay. Increasingly, in-service education is being targeted at teachers at 'landmark' stages of career or role development, recognising the value of economy of scale and relevance to organisational need, since such teachers are most likely to be in high states of readiness to reflect systematically on their thinking and practice – and on the contexts in which they occur. The danger, however, is that such a formula approach ignores teachers' intellectual and emotional growth needs; those concerned with pedagogic or subject knowledge; and those concerned with maintaining their sense of vision or purpose – all crucial to sustaining and improving the quality of their teaching.

Maintenance of vision and purpose is a particularly neglected area of development. Yet it is of paramount importance to commitment and motivation. Research shows that initial commitment and care sooner or later may diminish. Although, writes a Canadian researcher, many teachers begin their careers, "with a sense that their work is socially meaningful and will yield great satisfaction", this is lost as "the inevitable difficulties of teaching ... interact with personal issues and vulnerabilities, as well as social pressure and values, to engender a sense of frustration and force a reassessment of the possibilities of the job and the investment one wants to make in it" (Farber, 1991, p. 36). Considerable variation in teachers' commitment to pupils and their own work in the classroom has also been observed (Raudenbush et al, 1992; Le Compte & Dworkin, 1992). Citing research by scholars in the United Kingdom, USA, Canada and Switzerland (Sikes et al, 1985; Ball, 1987; Huberman, 1989; Hargreaves & Earl, 1990; Noddings, 1992; Goodson, 1992), Andy Hargreaves, a colleague in the Ontario Institute for Studies in Education, finds that: "many teachers in mid-to-late-career ... who have become 'disenchanted' or 'defensive focusers', no longer hold the good of their pupils as a high priority" (Hargreaves, 1993). This is a concern which suggests the need for professional development opportunities through which moral purposes and values may be revisited, particularly, it seems, at mid-career points.

It will be clear then, from a range of research worldwide, that there is a recognition that professional development must take account of where teachers are in their lives and careers, that the kinds, levels and intensities of professional development opportunities available must relate to these, and that resources should be targeted accordingly. Together with attention to the conditions for professional development and quality and kinds of intervention available in support of professional development (Day, 1991, 1993), these will form factors contributing to its effectiveness.

Theme 2. Research Knowledge: modes for professional learning and development

The history of research concerning teacher development is that teachers have not generally taken an active part in the production of knowledge about their own teaching – indeed, there has long been a tension between so-called 'scientific' knowledge (theory) and professional or practical knowledge (practice). In a sense teachers have been disenfranchised. They are perceived as basing their practice on their professional, practical knowledge and experience.

> *Teachers are cut off, then, both from the possibility of reflecting and building on their own know-how and from the confusions that could serve them as springboards to new ways of seeing things. (Schön, 1992, p. 119)*

Important issues, therefore, are how practice can become reflective, and by what means the teacher may be supported over time in developing

reflective teaching practice at different levels (Day, 1993). It is equally important to recognise that, to date, much learning through reflection has been private. Conditions of service and the organisational cultures in many schools do not allow for regular professional dialogue about teaching which goes much beyond anecdotal exchange and the trading of techniques.

Argyris & Schön, who investigated the work of people in several professions, including teaching, more than 20 years ago characterised this 'normal' world of learning as 'single loop' in which "we learn to maintain the field of constancy by designing actions that satisfy existing governing variables" (Argyris & Schön, 1974). Promotion of this kind of learning is prevalent in school cultures which discourage systematic self and peer review of thinking, planning and practice. More importantly, it remains embedded in the reality, if not rhetoric, of many training courses for teachers which teach self-reliance and self-sufficiency, and in school cultures "where the sharing of problems and issues may be seen as signs of weakness". Argyris & Schön (1974) stress the need from time to time to move to 'double loop learning' in which intentions and practices in teaching are raised to an explicit, publicly accessible level.

As yet, however, there is still relatively little documented evidence of widespread systematic application in initial teacher training or CPD in schools, further and higher education of the considerable research-generated knowledge about reflection designed to uncover and make explicit the personal theories that frame teacher learning (but see Handal, 1990; Korthagen, 1993; Hatton & Smith, 1995). Most research concerning in-service education tends to focus upon organisational contexts and modes of delivery. For example, in the USA Bruce Joyce's 'coaching' matrix provides a means through which choice may be made between intervention strategies (Joyce, 1989). In the United Kingdom, Les Bell identifies three approaches to CPD, i.e. (1) individualistic (apprenticeship and course-based); (2) (group school-based and school-focused) and (3) professional development (Bell, 1991). There are many more. There are few in-depth longitudinal studies, however, of their impact. Whilst it is important, in terms of research, to evaluate the outcomes of the application of such models upon teachers' thinking, planning and practice, it is necessary also to make explicit what professional learning principles are embodied in them if we are to add to our knowledge of professional learning and development. Many approaches, for example, are based either implicitly of explicitly upon assumptions that 'transformation' will occur as a result.

Rogoff (1994) describes humans learning together as a 'community of learners' and suggests that learning is "a process of transformation of participation in which responsibility and autonomy are both desired". Whilst learning itself is a natural process, and so will occur regardless of the social environment, the *quality* of learning may differ according to both the environment, the level and kind of participation, and the learning biography of the individual. Learning processes and outcomes, therefore,

will differ with each individual, their social circumstance, attitude and life history. On-the-job learning which results in growth of personal practical knowledge will be idiosyncratic, *ad hoc,* alone. It will be largely implicit, unremarked and unrecorded. Yet:

> *In the new systemic view of human action and development the relationship between people and the arena in which they act is an important factor that shapes the nature of the experience and the form of knowledge or insight gained. (Crawford, 1995)*

It follows that if personal knowledge is shaped in part by the contexts in which it has been used, then "transfer of knowledge between contexts is limited" (Eraut, 1994). An important aim of adult education, whether it is directly concerned with enriching the individual as person or the individual as employee, is to address the dialogical relationships between theories (why we do what we do) and practices (what we do and how we do it). In this way transfer of knowledge problems is minimised. This is traditional and a routine part of most adult educators' values and repertoires.

According to the authors of a recent research report by the National Foundation for Educational Research (UK) into the effectiveness of in-service education, the most popular means for promoting professional development – school-provided INSET – may not properly be able to promote the necessary range of outcomes essential to continuing high quality professional developments, since they are predominantly limited to information, awareness and provisionary (third order) outcomes. Professional development needs to provide for motivational, affective and institutional (second order) outcomes, and (first order) outcomes related to knowledge and skills (as against content) and value congruence. The report concluded that INSET experiences which focus on (or are perceived as offering) only third order outcomes are least likely to impact on practice, unless other higher order outcomes are already achieved or already exist" (Kinder et al, 1991, p. 59).

Evidence from this and other studies suggests that higher education courses can provide a necessary counterbalance (some might say palliative) to the predominant diet of training available to most teachers. More research is needed, however, to determine the most effective means of utilising the higher education perspectives which, historically, are often far removed from the press of school and classroom life. Yet those in higher education are ideally placed to work in collaboration with teachers to evaluate outcomes, and to map different approaches to INSET, their underlying principles, and relationships with the quality of professional development, the quality of teaching, and the quality of learning and achievement. Even the burgeoning development of teacher competences at best can only "illuminate different facets of what is, at the end of the day, a complex whole" (Burgoyne, 1989). Claims of 'practicality' and 'relevance' made by those who concentrate finance and effort on short training opportunities which predominantly focus upon institutionally

defined needs must be subject to intellectual scrutiny, since they may well, in the long term, result in the cultural isolation and parochialism of teachers whose sense of vision and whose intellectual needs are not nurtured in the narrowly focused race for increased technical proficiency. The limited conception of what it is to be a teacher (referred to elsewhere as the 'technicisation' of teaching) which is promoted by such a diet may well be detrimental to professional development.

Figure 1 presents a multidimensional professional development map of the contexts in which the learning and development of teachers takes place. It may serve to inform designs for the study of in-service teacher education across different national contexts.

89mm

Figure 1. Professional development: research variables.

Theme 3. Research Utilisation and Dissemination: issues of ownership and effect

Writing about the limits of educational research, John Eisenberg reported on a symposium which he attended in Canada in 1980, and of predictions made by Lorne Hill, then a professor of education at the University of Toronto. As a result of frequent visits to a number of schools in Ontario, Hill concluded that "many students (a) are illiterate or can barely read or write, (b) are innumerate and reveal no ability to do mathematics at the expected level, (c) have great difficulty in learning foreign languages, (d) are ignorant of the most elementary historical, social, and political events, and (e) have little respect for one another or for their teachers"

(Eisenberg, 1995, pp. 373-374). He predicted that despite all the research, programmes and plans, the situation in 1990 would be the same. At the time, Eisenberg was appalled and upset that Hill was failing to appreciate the important work and genuine advances of research. However, he admits that in 1990, Hill's predictions had largely been realised. He goes on to criticise the rational planning, scientific research and development models; and suggests that if research is to "make a difference", then "we shall have to recognise that factors other than rational planning and research have considerable influence on our destinies. As a result, we would downplay our habit of drawing on the traditional behaviouristic, statistical, and variability model of research and development" (p. 378).

In the context of CPD in the United Kingdom, Ray Bolam (1994) analysed four large-scale qualitative research and development projects, over a 20-year period, aimed at teacher development. They related to four aspects of CPD (INSET), induction, school-based INSET, management development, and appraisal (Bolam, 1994). He concluded that:

> *All four cases confirm that policy formulation and implementation are complex processes which take place over, sometimes lengthy, time periods ... that research projects can play an important role but rarely, if at all, a crucial one; that, rather, research contributes to the overall professional and political milieu of the educational process ... and thus has a longer term, diffuse and unpredictable impact on practice in schools. (Bolam, 1994, p. 44)*

These two criticisms from Canada and the United Kingdom of the power of research *inputs* to predict learning *outputs* with any accuracy indicate the need to move beyond rational planning models. The findings will not surprise, nor are they new. The education landscape in every country in the world is littered with the debris of government-inspired large-scale reforms, and is still accompanied by the exhortations of government for better teaching and improved standards of achievement. Curricula content and structures change, new technologies are introduced, but teachers, it seems, continue to 'resist' improvement efforts, continue to 'fail' the nation. For their part, governments conveniently ignore the fundamental problems of recruitment and selection of teachers, poor conditions of service, the changed nature of the family lives from which students are drawn, and the need to provide differentiated, career-long support for teachers. In both instances, however, research cited is led by academics from higher education. In the first set reported by Eisenberg, there was no teacher involvement in the research. In the second, by Bolam, teachers were willing participants, but the personal, social and political contexts proved to be more important determinants in the longer term internalisation of the research and development projects. The first research model utilises, unsuccessfully, a traditional research-development-dissemination model; the second, with limited success, a 'social interaction' model of innovation.

A third model for the utilisation of research which has proved more effective is one in which (a) development is integral to the design and (b) participants are equal stakeholders in the process. The strands of this model are represented by *action research* (with its emphasis on intervention for improvement) and *narrative research* with its constructivist approaches. There are now many examples of these in the literature on CPD. Underpinning both approaches is a recognition that the research is partisan - carried out in order to "further the realisation of the goals of an education in a democratic society - which are to promote access to decent and rewarding lives for all students" (Zeichner, 1995, p. 168). Both explicitly recognise the ethical nature of research (teacher as client not object) and the centrality of teachers in their own development. We outside teaching cannot develop teachers. We can only provide them with opportunities for development.

As researchers we have a responsibility to use this as a means of reflecting upon our own purposes. We have choices to make. We may:

(i) ignore the evidence and continue to engage in the pursuit of knowledge for its own sake, leaving others to worry about its usefulness to the broader educational community;

(ii) continue to promote the separation of research from development on the grounds that we do not have the time or 'human relating' skills to work intensively with small groups of teachers over sustained periods;

(iii) seek to develop new 'partisan' models of research and development in CPD through which traditional dissemination difficulties (of ownership, transfer of knowledge, perceived relevance and application in the context of use) are minimised.

Each choice we take will have consequences for our standing within our own higher education communities which have their own rules of conduct. In the United Kingdom, for example, the triennial Research Assessment Exercise ensures that 'practice oriented' research is accorded less importance than that which is theoretically oriented. There is a broader issue here concerning both the core professional purposes of departments of education and their location within the academy. My own hope is that research in the years to come will refute the recent summary by Mike Atkin, former Dean of Stanford University and the University of Illinois, of the condition of academic research as proceeding along "almost independently of what happens in schools and the world at large".

> *I have come to believe that educational research as we view it today is not an enterprise that makes much of a difference on actual educational events, either in classrooms or in forums where decisions are made about the directions and workings of the educational enterprise. (cited in Zeichner, 1995, p. 156)*

For those engaged in research into in-service teacher education, issues of purpose, personal commitment, relevance and utilisation will be high on their agenda. In this sense, as researchers we cannot be objective or value free. Resolutions of social issues are embedded within political and

ideological contexts. Issues of policy, teaching, learning, effectiveness, improvement are not technical. Objectivity, "is largely defined by powerful interests within scientific and research communities, and so is a part of, not outside, the political process, despite its professed desire to be so" (Schratz & Walker, 1995, p. 124).

Theme 4. Researching Researchers: purposes, roles, responsibilities and accountabilities

Worlds which emphasise the systematic gathering of knowledge, formal examination of experience, professional criticism and seemingly endless discussion of possibilities rather than solutions, are likely to contrast sharply with those dominated by action, concrete knowledge and busyness (Day, 1991, p. 537; Cuban, 1992, p. 8). However, potentially, practice-based research does offer teachers the opportunity to engage in development which generates professional knowledge through systematic investigation with the help of a research 'mentor' or critical friend from inside or outside the school which otherwise might not be available. There are many examples of pockets of 'in-service' collaboration over time between schools and universities aimed at improvement. Fullan (1992) describes two such 'learning consortia' in Canada and the USA. Others, such as the Coalition for Essential Schools, are described by Lieberman & McLoughlin (1992); and there are several relatively small-scale collaborations elsewhere. A common difficulty, however, is a difference in core functions. That is, schools teach children and universities teach adults and pursue research. This research, then, requires a quite different 'mind set' by those who engage in it from that required in most other research endeavours. It requires of the participants technical and human relationship skills far beyond those necessary in more traditional research.

Too few teachers in schools have time built into their work which allows them to reflect, theorise, research and write. However, alienation also exists because many have colluded in this. There is a consciously calculated protective 'mystique' surrounding 'theory' and 'research' which allows one group of educationists to continue to assume power over another. I say 'assume' power because most members of the other group regard 'research' and 'theory', where they perceive it to be defined as being outside their control, irrelevant to their practical concern and remote from their practical experience.

It should not continue to be used as a means for exercising power or authority over teachers through knowledge generated by others outside the system, and reported in language which is either pejorative and policy-driven or impenetrable. Research needs to be used much more as a means of informing teachers' judgements about the contexts, purposes, craft, science and art of their profession and their teaching; and, alongside this, as a means of assisting them in revisiting these at different times across the span of their careers.

Why is it, then, that forms of research which are, in business terms, 'close to the customer', have not been adopted as core developmental strategies by more than a few university departments in the universities in the European Union and beyond? It is partly, I believe, because the collaboration which they demand is not easy. It demands 'sustained interactivity' (Huberman, 1995), the establishment and maintenance of long-term relationships which are at the very least co-equal, in which teacher educators, student teachers and teachers are "active agents in the production of a new pedagogic discourse, rather than merely the consumers of the professional knowledge produced by academics and educational researchers" (Edwards & Brunton, 1993, p. 156). Even then, there have been problems of this form of practitioner research being 'colonised' by higher education academics (Elliott, 1991).

Summary: towards a European research agenda: developing transnational partnership networks

In this paper, I have sought to identify the social knowledge and role contexts in which we live as researchers and teacher educators, some of what we know about teacher learning and development, its conditions or variables, and the personal, professional, institutional and broader policy contexts which affect this. Alongside this, I have attempted to raise issues concerning the purposes, usefulness and usability of the research which we do, to draw attention to the roles and responsibilities of those in higher education and to suggest alternative approaches. The research agenda that I will now suggest is based upon these first four themes but goes beyond them. I will preface it by brief reference to the European policy context in which we work. The European Commission's recently published White Paper, 'Teaching and Learning: towards the learning society', puts forward guidelines for action in the fields of education and training. Its authors state that "The future of European culture depends on its capacity to equip young people to question constantly and seek new answers without prejudicing human values. This is the very foundation of citizenship and is essential if European society is to be open, multicultural and democratic" (p. 8).

It suggests the necessity for cooperative partnerships between school and family, school and business and that "the challenge of cooperation between education establishments and enterprises is to accept enterprises as full partners in the training process" (p. 16). It recommends the notion of "sustainable flexibility", as a necessary condition to cooperation within organisations, cooperation between networks and organisations and cooperation at local level. I see such cooperation between schools, teachers and universities as being the way forward for research into the continuing professional development of teachers. We are no longer living in the world of simple 'either/or' choices but one in which we must select from a range of choices which combination is most appropriate to purposes, responsibilities and

accountabilities. Our responsibility is to connect our own particular interests to those of society. Issues, then, would concern the themes outlined below.

Research Themes for the 21st Century

Teacher Quality

x What kind of teachers are needed to support the vision of the White Paper for a 'just' society and for men and women who are creative, collaborative and versatile?

School Improvement

x What are the conditions necessary for effective teaching which meets the needs of society?
x What are the characteristics of a 'good' school?

Teacher Development

x How do teachers learn about teaching on the job? Why do they change (or not)? When do they learn the most?
x What is the nature and role of reflection in teacher development?
x What influences teacher development (lives, conditions, school leadership cultures)? What is their relative impact?
x What influences success in teaching over a career? What are the relationships between teachers and the arenas in which they act?
x What is the relationship between personal practical knowledge, pedagogical craft knowledge and professional knowledge about education?

In-service

x What approaches are in use?
x What intervention strategies are used?
x How effective are they?
x What are the criteria for assessing effectiveness?
x How do the models used connect to knowledge of teacher learning?

Universities

x How many departments of education relate more clearly to the mission of the university community as a whole, whilst retaining their commitment to serving the interests of their professional community?
x How may university researchers embrace the principle of sustained flexibility and interactivity?
x What are the purposes, roles and accountabilities of university researchers in contributing to educational policy, teacher development and school improvement?

In short, we need to provide an accurate, illuminative, European *map* of how CPD is conceptualised, what models and approaches are used, of what we do in each of our countries in promoting continuing professional development. We need to do this through collaborative projects. Only in

this way will we be able to establish an empirical foundational knowledge base upon which we may build.

In order to achieve this we must form *thematic networks* and collaborate within and between. Such networks will, however, demand:

- x sustained interactivity;
- x a commitment to longevity;
- x interlinked projects;
- x strong leadership;
- x supportive infrastructures; and
- x intellectual coherence.

This is the challenge that we must address if our research is to become a part of rather than apart from the formulation, implementation and evaluation of policy and the development of our schools system and its teachers as a whole.

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TRENDS

TRaining Educators through Networks and Distributed Systems

MODULE B

ICT FOR TEACHING AND LEARNING

***Warning**: the production of the present module has been made possible thanks to an agreement between the TRENDS consortium and the National Council of Educational Technology (now BECTA) which was willing to make its own material available for the TRENDS pilot phase. Most of the module results from reuse and adaptation of existing NCET's material. At the present stage, only free distribution for the TRENDS teachers is allowed. Any other use must be negotiated with BECTA which remains the owner of the copyright of the original material.*
The same principles apply to some parts of Section One and Two, derived from original materials developed by CIDEAD for the Spanish teachers in TRENDS.

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INTRODUCTION

This module aims at giving you information and hints to let you think about how the use of Information and Communication Technologies (ICT) or Information Technologies (IT) can:

◊ **improve** didactics and learning process;

◊ **enhance** exchange of information among teachers, solution of common problems and development of common projects;

◊ **act** as an innovation factor.

In order to make the module an easy and operational tool, it has been structured in units. Consistently with the aforesaid aims, three are the main units which is composed of:

1. ICT as a support to effective learning;
2. ICT as a support to teachers' collaboration;
3. ICT as an engine to school-based innovation.

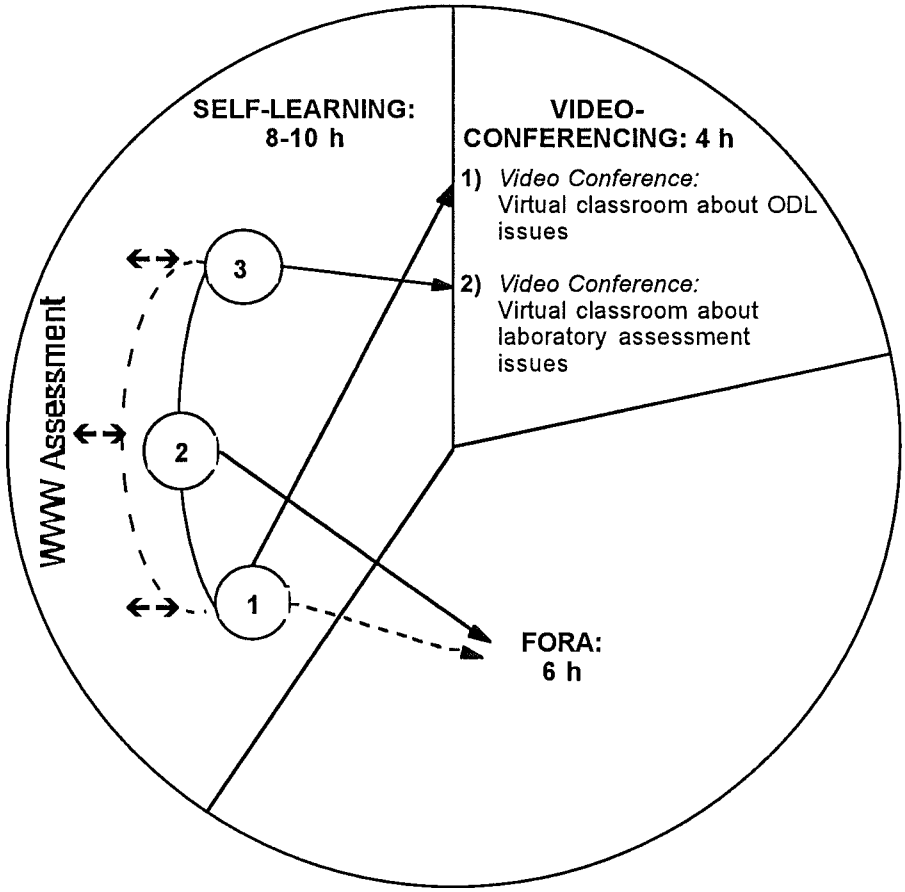
It is also characterised by the use and the integration of **resources of different kind**: the units provide you with sessions of **self-learning, collaborative learning** (through the discussion fora) **and participation in two video-conferences**. The duration of the whole module is of about 20 hours (see the graph illustrated below).

It is clearly impossible for teachers to understand fully how IT can be integrated with the teaching of their subjects if they are not aware of what IT can do. Initially, this module will focus on awareness-raising, looking at what can be achieved with ICT. However, it is important that does not remain at this level: teachers need to progress to considering IT's connection with their subject, and the place of IT capability.

In this respect, each unit is articulated in two main parts:

◊ the former, where examples and hints are given in order to facilitate reflection;

◊ the latter more operational, where you will be asked to contextualise in your class-room activities the use of ICT to encourage the learning process, to surf and assess relevant WEB sites, to take part in discussion fora and video-conferences.



Link between Units

Suggested activity inside Unit

Necessary integration between resources of different kind

UNITS

1 — ICT as a support to effective learning

2 — ICT as a support to teachers' collaborative learning

On-line projects develop-ment

Interdi-sciplinary issues

3 — ICT as an engine to school-based innovation

UNIT 1:
ICT AS A SUPPORT TO EFFECTIVE LEARNING

The present unit will give you elements to let you think about advantages and potential of ICT in the teaching and learning process.

Particularly, it will explain to you how the introduction of flexibility dimensions into didactics can:

- ◊ **favour** individualised and flexible learning and learning by discovery;
- ◊ **promote** pupils' active and autonomous attitudes;
- ◊ **stimulate** group-working;
- ◊ **differentiate** activities to deal with special needs;
- ◊ **sustain** motivation;
- ◊ **respect** different learning styles;
- ◊ **respect** different learning paces.

*Time (study + activity) = **4 hours***

INTRODUCTION

BACKGROUND INFORMATION: BASIC CONCEPTS OF ODL AND ICT

Foreword:
Before going forward to parts one and two, you might need to know some basic concepts on Open and Distance Learning and its evolution, as well as on Computer Mediated Communication in ODL. This also with the aim of giving you some background information which might support you when participating in the video conference about ODL issues. In case you think you are already aware enough of these general issues, feel free to pass directly to Part 1.

The TRENDS project will make use ICT in order to create an environment for distance, school-based teachers training. In order to understand in depth the rationale and nature of this teacher training environment, it would be useful to focus on Open Distance Learning (ODL) as promoted by ICT in an attempt to clarify the basic concepts and issues arising from current developments in this area.

ODL Characteristics

Compared to a traditional training system, there are several advantages in the use of ODL systems. Among others, there are no limitations of the following kinds:

- ◊ **Geographical:** One of the problems that often have to be faced by teachers needing training, as part of their continuous professional development, is the fact that some of the courses that might be of interest are provided in distant places. Such a condition may discourage them from attending to or *participating in training actions of their preference, or force them into situations of great professional, family and/or personal inconvenience.*
- ◊ ***Schedule of lectures:*** *Since ODL systems are based on autonomy and self-learning, the trainee is not limited by any schedule and, thus, the schedule used for learning purposes is aligned with his own pace. An exception for that appears in ODL systems where real-time technologies, such as audio or video-conference, are used.*
- ◊ ***Time and rhythm of learning****: Another feature of ODL systems is their flexibility as far as timing (the time spent in a learning task) and rhythm of learning are concerned.*
- ◊ ***Learning environment****: In a traditional education system the learning environment is pre-defined, usually by the institution that organises the training courses. In ODL systems the learning environment is selected by the trainee and it may be his/her house, his/her school, a training centre nearby his/her house, etc.*
- ◊ ***Trainees' learning needs:*** *Since in ODL systems the courses ordinarily take a modular form, with pre-defined objectives, the trainee can choose to take up the modules which correspond to his/her training needs. This clearly requires a high level of responsibility, discipline and self-control on part of the trainee, hence the fact that these courses are often considered more adequate to adult education, as is the case of the trainee-teachers in the current project.*

- ***Individualisation of the teaching/learning process:*** *In an ODL system, wherever s/he considers it necessary, the trainee may ask for help - using E-mail, for instance - from the trainer(s), his/her colleagues or an expert, in search of new sources of information or other means that may enable him/her to attain the objectives with various strategies.*
- ***Training costs:*** *Another advantage in the exploitation of ODL systems is the reduction of training costs, both for the trainee and the training institution. For the former, because s/he won't have to travel, and for the latter, because theoretically there is no limit in the number of trainees taking a course. Compared to traditional systems, which require the physical presence of trainees, the number of trainers tends to be much smaller in an ODL system.*

ODL Evolution

Distance education started with the classic courses by mail and continued with the use of similar media formats, such as television, radio and other more advanced. The interaction of the trainee with the trainer(s) was, and still is, in any case, rather limited. The previous experience related to ODL services for teachers' training has been normally provided by Open Universities. Among their statutory attributions, these universities develop university degrees and courses for populations that, given their geographical dispersion, justify the use of ODL courses.

Teachers also belong to this type of population. The learning scenario most frequently used by Open Universities is supported self-learning. The trainees receive the learning material, texts and formative evaluation after their registration in the courses they want to take. Radio and TV sometimes support delivery of the core content of the courses. In other cases, the core content is delivered by means of print material, audio or video cassettes or more recent technologies and resources, such as tutorial software, CD-ROM, etc.

Individual support is supplied by Post Office or regional offices (normally installed in regional teachers training institutions). Teachers' assessment may also be carried out with the support of regional institutions. The print learning material and the interaction between the training institution and trainees, before the widespread of ICT, were mainly provided by printed texts and the Post Office.

Due to its support technologies, especially the advanced telecommunication technologies, the third generation of ODL systems has potential to enable people to take any given course in a large list published wherever these technologies are available, tutored by experts of more or less distant places, home or abroad.

Advanced telecommunications have opened up opportunities of attending distance courses, better adapted to the trainee's needs, with greater interactivity, providing more possibilities of individualisation of the learning process, in which the trainer is not a mere transmitter of knowledge and the trainee is not just a passive receiver.

As they explore innovative technological structures, the latest ODL systems contribute to the creation of learning scenarios that have just recently started being studied and implemented. However, in dozens of Internet sites, there are already several open courses in various learning areas, features and methodologies, which allow the global net users to access courses of interest, this way meeting more easily ***different training needs*** *and providing* ***diversified learning paths****. The diversity of learning paths and subsequent* ***individualisation*** *of the learning process are also related to the kind of* ***learning material*** *which is provided. This material, as opposed to written sequential ones, explore* ***hypertext*** *structures, making possible varied connections among the different parts of documents.*

On the other hand, it can take the form of ***multimedia*** *material (with the incorporation of sound, text, still image or video image) with the corresponding advantages.*
As far as ***interactivity*** *is concerned, these ODL systems allow interaction not only between trainer(s) and trainee(s) but also among the trainees themselves. This is possible because the created learning scenario can identify and accommodate the trainees' interests, which can be developed into collaborative tasks. The rapid information exchange enhances interactivity of these systems. For example, a trainee's question or preoccupation may now be answered in some hours.*
From what has been mentioned above, one can conclude that recent ODL courses using advanced technologies offer great advantages that increase learners' motivation and facilitate the learning process itself.

Computer Mediated Communication in ODL

Computer Mediated Communication (CMC) systems are the use of ICT to provide a computer mediated environment which allows one-to-one, or one-to-many communication. (CMC) is a generic term which includes the use of electronic mail (e-mail), computer conferencing (both text-based and video), and mailing lists. Benefits of CMC to individual learners include:

- ◊ *peer group interaction;*
- ◊ *self-paced work;*
- ◊ *access to peer and tutor advice almost on demand.*

There is increasing interest in the use of Computer Mediated Communications (CMC) to provide an Open Distance Learning (ODL) environment for teacher education, which is already impacting on teacher training, both pre-service and continuing professional development (CPD). Talk of 'virtual' classrooms and 'telepresence' may enthuse the technologically converted, but is unlikely to convince all potential participants that electronic communications has a place in teacher training. To help readers make up their own minds, this chapter covers some of the main benefits to be gained and looks at some aspects of CMC which might be of particular use in supporting CPD (Continuous Professional Development).

In education, the networking of distance learners for course delivery and mutual support can provide effective professional development. Training providers can deliver courses on-line and give students access to guest lectures over the network. CMC is keeping tutors, teachers, mentors and students in contact. Increasing use and familiarity with the technology reinforces teachers' confidence and competence in using IT.

Mason (1995) has identified a number of ways CMC can support professional development and training, for example:

- ◊ *enhancing tutorial support;*
- ◊ *a forum for interaction between teachers and learners;*
- ◊ *a medium for mutual support;*
- ◊ *facilitating access to expert debate;*
- ◊ *as a teaching medium;*
- ◊ *for course delivery.*

Early evidence from a number of projects which have used CMC for teacher education, suggests that the benefits of CMC for staff development and training are considerable:

- ◊ *participants can be involved in several discussions at once, something difficult to achieve in face-to-face discussions;*
- ◊ *discussions are recorded electronically and can be accessed at other times;*
- ◊ *as part of an institution-wide or faculty-wide programme, the electronic 'common room' has a democratising influence on decision-making;*
- ◊ *when we open our doors onto the Internet we can share research and ideas about teaching and learning with international communities;*
- ◊ *membership of an electronic community of teaching colleagues, people with common research themes and special interest groups decreases feelings of isolation for all participants;*
- ◊ *time and place become unimportant when we use asynchronous electronic communications;*
- ◊ *conferencing encourages sharing and dissemination of ideas;*
- ◊ *participation in the conferences can be active or passive, users may never post messages, but learn a great deal from reading the discussions.*

CMC as a support mechanism

CMC adds a collaborative learning experience to ODL education programmes, diminishing the isolation frequently experienced by students and staff on these courses.

There are a number of advantages to using CMC as a support mechanism for ODL:

- ◊ *access to tutor and peer support on demand, independent of time (asynchronous) - with portable computers access is also independent of location;*
- ◊ *access to national and international research, expertise and opinions;*
- ◊ *access to materials as required.*

By using CMC, teachers, and tutors can maintain close contact irrespective of distance or preferred time of working. This can be achieved by using computer conferencing.

Computer conferencing is a broader term referring to systems that link people together in many-to-many communication. Computer conferencing may be an ideal starting point for teachers and student teachers to share practice and collaborate within the time constraints of their work and other studies.

Enhancing tutorial support

ODL systems are based on autonomy and self-learning. CMC can be particularly beneficial for teachers engaged in school-based projects where their efforts might be enhanced by ongoing tutorial support. For example, a school-based project might involve developing a task with pupils. Students may feel unsure about the activity in the light of classroom experience. They need to talk to someone and a video conference in real time (might be beneficial) or a text-based conference which can be asynchronous.

A forum for interaction between teachers

Classroom management, supporting children with reading difficulties, assessment and identifying suitable teaching resources, are some of the areas that have been discussed by students, teachers and tutors using CMC. Requests for advice or ideas may be initiated by anyone, and responses will come from a range of sources including other teachers who are undertaking the training, tutors and others who have been invited to join the discussion perhaps because of their particular expertise.

One-to-one interaction can be achieved by using electronic mail (e-mail). When using e-mail, individuals may send and receive personal e-mail messages to and from others for whom they have an electronic address. Messages are independent of time and distance (asynchronous) and can be read on screen, printed out or saved to disc. E-mail is usually restricted to text-based messages although inclusion of a graphic image is possible.

Another method of establishing, encouraging and supporting debate is via mailing list. A mail list is like a conferencing system, but uses electronic mail. Mail-lists are used to enable a group of people who all have e-mail to send and receive communal e-mail on a particular topic. It is a method of providing a similar environment to a conference system but using e-mail. There is no permanent message storage system. Instead, a message posted to the conference is sent to a mail-list server, which then copies the message to every subscriber on the mail-list. Each subscriber finds a copy of all new conference messages waiting in their mail.

A medium for mutual support

Teachers working on ways of improving their practice believe that interest and support from colleagues is an important factor in professional development. Often there are not enough people with whom to discuss ideas. By inviting others who share similar interests to participate in on-line discussions teachers can be encouraged to continue working on their practice, sharing their success and frustration and seeking advice and solace from like-minded others.

Facilitating access to expert debate

A group of 'experts' in an area can be invited to engage in a conference. This can be used to stimulate later discussions between participants which is either face-to-face, on-line or both. Experts may be drawn from the academic community, teaching colleagues or members of other professional groups with an interest in education, e.g. careers service.

Communications technology as a delivery mechanism

One of the problems that often have to be faced by teachers needing training is the fact that some of the courses that might interest them may be held in distant places. The time taken to travel to course and the regularity and frequency of attendance, may result in a teacher being unable to attend all or part of the course. For these reasons, ODL systems are often seen as an alternative substitute. CMC brings a greater control and flexibility to the delivery mechanism of ODL.

Strengths of CMC as a delivery mechanism:

- ◊ *training locations can be flexible and not necessarily local;*
- ◊ *learners can experience scenarios outside their experience;*
- ◊ *entry and exit points can be selected by the learner;*
- ◊ *immediacy of control means that the course is delivered at the pace of the user;*

- ◊ *learners can return to consolidate their learning;*
- ◊ *the increasing availability of portable computers means learners can;*
- ◊ *choose the most suitable time and place for study.*
- ◊ *A feature of ODL systems are their flexibility as far as the learning timing, i.e. the time spent in a learning task and the rhythm of learning. The asynchronous nature of CMC means that users can read and reflect on ideas presented in their own time. The text of a lecture can be sent to students who are enrolled on a course. Students can request further clarification or explanation. Using CMC learners can think about the issues and respond with questions to clarify a point or to refute a line of thinking. They can consider their reactions to the text, exploring what others have said about the subject, and make a considered response. The tutor can reply individually or to the whole group.*

PART ONE

THE VALUE OF ICT IN THE CURRICULUM

Uses of ICT are found everywhere. Their importance in everyday life is taken for granted. It is vital, therefore, that students should learn about the role of ICT in the wider world and its implications for their future. It is equally important that students should learn to use the ICT tools that are available. They should become critical and autonomous users of ICT. Achievement in ICT capability will not happen by accident.

Students need to be taught new techniques and offered opportunities to try out them out and to compare the effectiveness of using IT with other methods of working. These opportunities need to be offered in a coherent manner. Students are unlikely to be given opportunities to use IT in all areas of the curriculum unless this is carefully planned and co-ordinated.

THE VALUE OF ICT IN TEACHING AND LEARNING

ICT can have many positive effects on **teaching** and **learning**. For students there are frequently gains in:

- ◊ motivation;
- ◊ presentation;
- ◊ questioning skills;
- ◊ problem solving;
- ◊ information handling;
- ◊ techniques of modelling.

Teachers often find that (among many other gains) using ICT can lead to:

- ◊ rethinking teaching and learning strategies;
- ◊ more opportunities for differentiation;
- ◊ greater expectations of their students;
- ◊ more opportunities for individual teaching and group work;
- ◊ better understanding of their students' learning.

THE VALUE OF ICT CAPABILITY

ICT is now a key skill within the curriculum. Without a grounding in ICT, students will be disadvantaged in their ability to take part fully in the rest of the school curriculum and the wider world of work.

It is clear that our society is rapidly transforming into one which is based on information, requiring its citizens to be familiar with and at ease with information-based resources and their manipulations.

To take full advantage of information-based resources all students will need opportunities to develop:

- ◊ a competency and confidence in the use of computers and their peripherals in a range of contexts;
- ◊ an awareness of the importance and limitations of computers and ICT tools in society;
- ◊ an appreciation of the range of applications of ICT, including using IT to communicate and handle information, measure;
- ◊ control and model;
- ◊ an understanding of the contribution that ICT can make to solving problems in a systematic and methodical manner.

ICT CAN...

ICT MEETS INDIVIDUAL NEEDS AND ABILITIES

Not everyone learns in the **same way** or at the **same pace**. Good teachers have always sought ways of presenting teaching material in **different ways** for **different students**, but this is not always easy to do. Information technology can help.
A computer:

- ◊ can be used to **overcome** physical disabilities and to open up learning opportunities for students: even the student who is unable to attend classes can share in education using distance learning;
- ◊ can work at a speed **suited** to the student's needs, rather than at a common pace;
- ◊ **allows** a student to go back over work, ask for clarification and make mistakes without being shown up in front of others;
- ◊ **can provide** different entry and exit points, allowing the student to start and end work at different places;
- ◊ **can give** immediate positive feedback, so the student knows that he or she is on the right lines; there is no need to wait for the teacher to mark the work before turning to a new task;
- ◊ **can be** infinitely patient, is non-judgmental, informing the student of success or failure without saying that the student is good or bad;
- ◊ **can link** to other learning resources such as CD-ROM and interactive video, allowing the student to find out information from a variety of sources without having to consult the teacher.

ICT AND LEARNING BY DISCOVERY

Multimedia software allow students to interact with original source materials in new ways which can lead to more reflective work and deeper understanding.

- ◊ Students are not limited to the resources within their physical reach;
- ◊ Newspapers, museums and art galleries are able to make their treasures available in every classroom;
- ◊ Ideas can be cross-referenced and presented in text, sound and images;
- ◊ Picture indexes and menu systems allow easy access to sophisticated materials;
- ◊ Vast quantities of information can be accessed very quickly;
- ◊ Electronic sources provide students with references that make the use of traditional resources more effective;
- ◊ Information skills like skimming and scanning and the use of key words develop naturally.

As they work with these large collections of data, students become familiar with different ways of arranging information. Grouping, organising and classifying become second nature to them and they organise their own work more effectively.

In comparing different information sources, such as newspapers and encyclopaedias, students see the importance of careful evaluation of the resources they use. Questions are raised about who is doing the writing and whether it is based on fact or opinion.

ICT CAN HELP STUDENTS TO UNDERSTAND AND ASSIMILATE INFORMATION MORE EASILY

ICT can display still or moving pictures, link at one point sounds and text, and enable information entered once to be used in many ways.

- **Information handling**
  Simple databases can show students that the information they have found can be stored and organised in many different ways. Deciding which is best for the task they have to do is an important information-handling skill.

- **Visual concepts**
  Visual concepts are important in many professions. Seeing what is abnormal is vital to doctors or engineers.
  Weather forecasters and sailors need to recognise changes in cloud formation and interpret their meaning.
  Computer-generated models and tutoring programs contribute interactive learning modules to many professional training programmes.

- **Creative writing**
  Students and teachers can share thoughts and ideas as they write a playscript together. They can use picture sequences with speech bubbles which can be filled in by the teacher, the student or together. This informal language can then be printed in playscript format leading the students easily into a more abstract and formal style of writing.

ICT CAN REDUCE FAILURE AT SCHOOL

Many students, particularly adult learners and older students who feel they have been failed by the traditional educational system, will respond better to correction from the computer.
Students enjoy working with computers and will concentrate longer than they would with pen and paper. Motivation and concentration on learning are key factors in acquiring basic skills.

Once students appear to fail they are often made to work on low-level activities, giving and receiving the required information in order to get the right answers, until their basic skills improve. Computers can offer these students the chance to work on higher-level activities, seeking information and using it to solve problems. They learn to communicate their ideas, to ask questions and be critical, and are motivated to acquire the basic skills which will support this kind of activity.
Multimedia can present problems from real life which draw on the previous learning and experience of students and link it to their current learning. Seeing practical applications makes for a richer and more enjoyable experience and stimulates the student to go on learning.

ICT CAN HELP TEACHERS TAKE A FRESH LOOK AT HOW THEY TEACH AND THE WAYS IN WHICH STUDENTS LEARN

Having a computer in their classroom forces many teachers to think imaginatively about its effective use.

Research identifies three approaches which teachers use:

1. using the computer as a kind of machine-tutor allowing students to use it alone, often as a reward for good behaviour;
2. using software tools, especially word processors, to support their existing style of learning;
3. devising new kinds of learning tasks which the computer makes possible or easier to do.

As many classrooms have only one computer teachers have to think about **how** it should be used. Sometimes they use it with the whole class, sometimes with small groups or individuals. They see that group work encourages discussion and teamwork but that group size is important if everyone is to participate. They have to think about how group work can be individually assessed.

Often students are more skilled than teachers in handling the technology. Teachers who accept this **change in relationship** can use it to gain more time to support the learning process. Students can control the pace at which they learn and choose to work in the ways in which they learn best.

Easy access to information sources means that the **teacher no longer controls** and constrains the amount of information the student works with and investigations may take off in new directions.
Students explore ideas alone with teachers ready to supply new information, to make links with prior learning or to re-direct thinking when learning is blocked. Teachers and students become partners in learning, using a computer to explore new areas together.

ICT OFFERS POTENTIAL FOR EFFECTIVE GROUP WORKING

Because computers help teachers to provide structure for and direction and support to students the management of group work becomes easier. Students working in small groups at the computer work collaboratively for longer. With the computer as a focus they discuss ideas, listen to others and build on one another's experience and knowledge.

Often the process of explaining to others what they think helps individual students to understand and to learn more effectively.
When doing group work with computers, good classroom management is essential.

How the groups are chosen is important. Teachers need to look carefully at differences in ability, gender and cultural experience. Their own observations of what works in terms of grouping will be important. Research suggests that three is an optimum group size.
Sometimes in pairs one partner can dominate while if the group is larger some students become passengers instead of participators.

Where students' ability and experience are carefully matched, working in pairs can result in greater achievement and less anxiety about learning. Sharing responsibility creates an

environment where getting the wrong answer is not a problem so long as students can analyse why and learn from their mistakes.

Teachers must be clear about the type of task they are setting and what they hope it will achieve. Sometimes students will be working in groups but will need to produce individual results. Students working on a co-operative task to produce a group result are more likely to work collaboratively.

ICT CAN HELP STUDENTS TO LEARN WHEN THEY ARE USED IN WELL-DESIGNED, MEANINGFUL TASKS AND ACTIVITIES

All tools are useless unless someone shows you how to use them and what to use them for. Teachers need to **ensure** that computers are used in worthwhile activity. Too many students learn how to use computers but not **how to use them appropriately** with real tasks..

Teachers are the link between students and learning. Teachers should introduce new work in ways which their particular students will understand. This linking is especially important in computer work.

Teachers need to ensure that work with computers includes tasks which:

- ◊ have clear learning outcomes;
- ◊ are described simply and directly;
- ◊ offer opportunities for different styles of learning;
- ◊ relate to the cultural backgrounds of all students;
- ◊ are interesting to both boys and girls.

Students need to know how they are expected to work. They need to know:

- ◊ **what** they will learn
- ◊ **why** they need to learn it
- ◊ whether the **task** is for an individual or a group
- ◊ **when** they will have access to the computer
- ◊ **how** their work will be assessed

Challenging computer activities require students to think about and respond to results. Well-designed tasks can show students how their learning can be applied to real problems.

ICT: STUDENTS MAKE MORE EFFECTIVE USE OF COMPUTERS IF TEACHERS KNOW HOW AND WHEN TO INTERVENE

Most teachers intervene effectively and easily in other curriculum areas but some find it difficult to help students learn with ICT. They are uncertain **when** and **how** to intervene. Early research findings indicate that this may be because the relationship between student and teachers changes when computers are introduced.

- ◊ When work begins with ICT, students often ask for help and the teacher's intervention is usually to encourage or reinforce learning. Control and management of the learning is with the teacher.
- ◊ As students become more experienced with ICT they need less encouragement to use the computer but effective intervention by the teacher will help them think about what they have done and predict what will happen next.
- ◊ The teacher becomes an adviser or counsellor to help students set their own tasks and goals.
- ◊ Sometimes the teacher's intervention is needed to redirect the student by suggesting strategies for problem solving, or by giving a new piece of information. The teacher becomes a resource to enrich the learning with IT.
- ◊ As students gain more control over their own learning the nature of the teacher's intervention changes again. The teacher moves to an enabling or facilitating role and students become more willing to work collaboratively with both the teacher and other students.

SOME EXAMPLES

Below, some examples concerning the use of ICT in some teaching subjects are given, in order to give you some cues to transfer/adapt them into your classroom.

HOW CAN IT HELP IN THE GEOGRAPHY CLASSROOM?

Students studying geography can use IT to:

- ◊ enhance their skills of geographical enquiry and investigation;
- ◊ gain access to a wide range of geographical knowledge and information sources;
- ◊ deepen their understanding of environmental and spatial relationships;
- ◊ experience alternative images of people, place and environment;
- ◊ consider the wider impact of IT on people, place and environment.

IT capability will be developed in geography by using IT for:

Communicating and handling information

The use of word processing, desktop publishing, presentation and graphics packages helps to enhance and refine the precision of students' work and encourage the development and articulation of students' own ideas. This will develop capability to communicate at a variety of levels.

The use of spreadsheets, databases, graphing and mapping packages helps students to manipulate, interpret and predict and display information, some collected through fieldwork. This will develop the capability to pose questions, test hypotheses, analyse and evaluate information and detect patterns and relationships.

Controlling, measuring and modelling

The use of data-logging equipment supports students as they measure, collect and display fieldwork, weather and satellite data. This will develop capability in planning, analysis and interpretation of data.
Students can use simulations, spreadsheets and modelling software to explore and investigate geographical relationships.
This will develop the capability to manipulate variables, make predictions and test hypotheses.

HOW CAN IT HELP IN THE SCIENCE CLASSROOM?

Datalogging equipment and special sensors are commonly in use in the science classroom to measure physical quantities in investigations, monitor changes in a given environment, and manipulate variables to test hypotheses. Likewise, the use of modelling software and spreadsheets enables the testing of hypotheses and solving problems. Spreadsheets and databases enable analytical work to be carried out on data and encourage students to look for patterns and relationships. Calculators can enhance the study of science and along with dataloggers and laptop computers are versatile and portable, enabling students to work outside the classroom when needed. Both word processing and desktop publishing software can be used for individual projects or for displays and presentations but are not used very often.

How ICT might be used: As well as the many CD-ROM encyclopaedias and databases available for this topic, students could use the Internet. There are many pages on the Web that provide information on the planets and stars, - e.g., Nine Planets (http://seds.lpl.arizona.edu/nineplanets/nineplanets/). Students begin by using a search engine to find a selection of pages. They would find that their search strategies would bring wide and varied results. They would have to practice to refine their results.

They could then evaluate relevant sites and incorporate relevant data and information into a document created using either a word processor or a desktop publishing package.

HOW CAN IT HELP IN THE HISTORY CLASSROOM?

Databases and spreadsheets are among the most commonly used forms of IT employed in a history classroom. Spreadsheets and databases enable analytical work to be carried out on data and encourage students to look for patterns and relationships as well as interpret and decipher historical evidence.
CD-ROMs are increasingly used in history, as more and more titles appear which provide appropriate sources, information and archives. Desktop publishing software is used occasionally for individual projects or for displays and presentations.
However, in many instances, desktop publishing has been used as a popular way of writing news articles about historical events from opposing standpoints.

HOW CAN IT HELP IN THE MATHEMATICS CLASSROOM?

The use of dynamic geometry software, spreadsheets and calculators can enhance the study of mathematics. Dynamic geometry software can help students to develop their visualisation skills as well as understand the relationships between angles and shapes. Spreadsheets and databases enable students to look for patterns and relationships. They also allow analytical work to be carried out on data. Graphic calculators can be used to explore functions and use equations, create graphs and do much that any personal computer can and their advantage is their portability. Ordinary calculators and laptop computers are both versatile and portable.

It is important to remember that pencil and paper work usually needs to take place alongside computer work and activities involving other mathematical equipment.

HOW CAN IT HELP IN THE ENGLISH AS AN ADDITIONAL LANGUAGE CLASSROOM?

With the development of language-teaching methods towards role-play in everyday situations, the communality is growing between English for speakers of other languages and English as a foreign language. Information technology (IT) can help in language teaching by creating increasingly realistic situations in which to communicate, such as shopping, paying bills, entertainment and health care.

IT offers the benefits of:

- ◊ repetition;
- ◊ one-to-one tuition;
- ◊ manipulation of language;
- ◊ immediate feedback;
- ◊ equity;
- ◊ differentiation;
- ◊ access to a wider range of accents and cultures;
- ◊ wider communications and access to real people;
- ◊ dissolving boundaries.

Word processing is often employed in language learning because it allows students to structure and draft documents, combine graphics with text and edit their work. The use of overlay keyboards can be a useful tool in acquiring and understanding new vocabulary. Students see objects on the overlay in context through the use of pictures, symbols and images, understand what each is and hear or see the English word or phrase when each is pressed.

Databases, the Internet and CD-ROMs can be used to learn about foreign cultures and as consolidation/revision aids for language learning. Videoconferencing, electronic mail and faxes are used to communicate with people from other countries. Television and Teletext are easily accessible, and text is usually kept to a minimum. Multimedia packages and audio-visual aids reinforce a student's development of the English language by combining text and sound with visual images.

To summarise:

- ◊ *The computer can provide fast and reliable feedback which is non-judgmental and impartial; this can lead to an unthreatening environment in which students are encouraged to make their own conjectures*
- ◊ *The very power of the computer means that it is often easy to press another button to gain further information; however, sometimes it may be more appropriate for students to reflect or to ask 'What would happen if...?*
- ◊ *The computer offers many powerful opportunities for generalisation based on experimental evidence but it is important that students are also encouraged to explain results and to analyse situations*
- ◊ *Dynamic images can support the development of visualisation skills and this may suggest new approaches*
- ◊ *Computers enable the use of real data in statistical work and so cross-curricular approaches may be more feasible*
- ◊ *Having machines available which can, for example, solve problems at the touch of a button has strong implications for the way particular topics are approached.*

PLANNING ICT ACTIVITIES

At this stage, after showing you the range of possible ICT uses, we invite you to start thinking about possible ICT applications you can do in your classroom to solve real problems, by planning their introduction. Planning ICT activities is the same as planning for any other area of the curriculum.

Medium-term planning allows teachers to identify the activities that students will be involved in over a period of time, such as a month or half a term. Links can be made between ICT and other subjects. This will include identifying whether:

- ◊ subject and ICT development will take place
- ◊ subject development will take place and ICT capability will be consolidated
- ◊ ICT capability will be developed and the subject consolidated.

At this stage it is necessary to specify the purpose of the activity and where appropriate skills are to be developed.

Short-term planning will identify opportunities with different learning objectives for individuals and groups of differing abilities.

In some cases it may be possible for similar activities to challenge individual students. For example, while some students are redrafting work by moving sentences or blocks of text, others may be checking and correcting spelling or inserting and deleting individual words. It is important that teachers evaluate the effectiveness of what has been taught against criteria identified in planning, and set out what students are expected to achieve in order to make judgements about their readiness to move to the next stage.

PROGRESSION

Progression in ICT capability should be seen as more than the development of ICT skills. The acquisition of IT skills, while important, is not sufficient on its own to develop capability. Students need time to consolidate their skills by applying them in a wide range of contexts. They need to be able to reflect upon their use of ICT in different situations before becoming fully capable of deciding when, and when not, to use ICT.

Progression in ICT capability can develop as students begin to choose the ICT tools they wish to use to meet the particular needs of an activity. Sometimes a familiar piece of software, or some of its facilities, will meet those needs. On other occasions, they may find that the ICT tools they used before are inadequate. The opportunity then arises for the introduction of new features within a familiar piece of software, or a more powerful program.

The software and the activity will determine the amount of teacher input required. The learning will, however, be focused and motivated towards developing the new skills necessary for the students' needs.

We cannot always assume that students will themselves identify the need for an alternative ICT tool. The introduction of new skills can often significantly improve students' use of ICT, and positive interventions by teachers can be invaluable.
Opportunities to talk with students about their use of ICT can help teachers in making decisions about whether to provide consolidation activities or to develop IT capability

further. This should be seen apart from, rather than integral to, an ICT activity, once students have had an opportunity to reflect on their experiences.

Progression in ICT arises, therefore, where students acquire new skills as a response to the needs of an activity. The consolidation of these skills, in a range of contexts, together with discussion and reflection on their effectiveness, leads to ICT capability.

ASSESSMENT

ICT capability is developed over a period of time. Since ICT capability involves far more than simply acquiring ICT skills, it is important that any assessment should take account of:

◊ the ICT skills developed;

◊ the contexts of the activity;

◊ the purpose of the activity.

As with any group activity, it is often difficult to assess the contributions of individuals. Discussion with the group can be valuable in ensuring that they reflect upon their experiences as well as providing an insight in to the role of each member.

The judgements teachers make will inform them in identifying and planning the next ICT learning opportunity that students require in order to:

◊ develop new skills;

◊ extend their appreciation of the potential and value of ICT.

It is no longer considered necessary to keep detailed records of assessments, although teachers may find it beneficial to record significant moves forward in learning. ICT co-ordinators have a vital role to play in helping colleagues to build a clear picture of what is significant through:

◊ informal discussion

Keeping some evidence will be useful to inform annual reporting to parents and end of key stage judgements of 'best fit'. It may be useful for students to evaluate their own work and where appropriate make decisions about the inclusion of work in records of achievement and portfolios.

LEARNING APPLICATION

The learning application that you will now develop can refer to something as simple as a short activity in a classroom, but also to the adaptation of an exercise or a theme proposed in a text-book, or even to the implementation of a long project with your learners.

The value of this application consist in being able to check personally the usefulness of Internet as source of resources for your teaching job. With respect to the TRENDS course, every teacher will be able to decide, according to her/his personal interests and needs, the nature and the duration of this learning application.

Your fist task will be to select some of the resources that your previously found on the Internet, considering their connection and relevance to the subject curricula of the group of learners that you are addressing.

The second step is to decide what kind of activity you want to design and implement. You should consider the equipment you can use and the knowledge about it already available to your learners. The nature of the activity can vary a lot depending on each subject, selected theme, available time, and your own imagination.

HOW TO CONDUCT THE ACTIVITY

In an ideal situation our activity could take place in a multimedia classroom with an Internet - connected computer per each learner. In such a way, your learners could access themselves the resources of the net. Through the data collected, and with the help of other applications, they could deliver to you a work rich of images, tables and duly commented graphics.

The reality is that in the majority of schools this availability of equipment is not existing, nor learners are prepared to do such a work.

So, let us consider which alternatives are available:

- ◊ Many schools have a computer classroom, though without external connection. If the computers have sufficient memory, some navigators could be installed to access WWW pages previously copied into the hard disk through a floppy disk or into the server if the classroom computers are networked.
- ◊ If only one computer is connected to Internet and you have a special overhead projector for computers, you can project on a screen the learning materials that you have selected.
- ◊ Whenever it is allowed, you can also print the pages that you have found and photocopy them for your learners. In such a way you can design interesting activities based on those materials. For many learners knowing that they are working with recently found Internet materials may constitute an incentive.
- ◊ Even in the simplest of cases, you can utilise the information found on the net to enrich a learning unit or to design on activity of a different kind. In such a case the learners may not even know that part of the information they are working with comes from an Internet search done by their teacher.
- ◊ Though the pieces of equipment you can use in the school are not always those that you desire, it does not mean that no learner can navigate from home. We can

design particular activities for them, or suggest that in the next Geography homework they consult Internet as well as the classic Encyclopaedias in the library.

However short is the activity, it must be embedded in the context of your subject, with clearly defined objectives, with a clear specification of the work to be done by learners and of the evaluation criteria that will be used to assess the achievement of objectives.

You should not forget that the activities may involve very varied degrees of difficulty and interest to your learners, so in any case you should design activities while considering the differences among learners that exist in every group.

After the activities have been done, it is very important to conduct a reflection and an evaluation of the work done, in order to improve future activities. You should analyse the difficulties encountered and the degree of achievement of the fixed objectives.

Finally, you should consider and assess the contribution that technology can bring to the teaching/learning process. In view of helping you in this activity, here follows a "Guide to the implementation of the learning activity" and a "Guide to the evaluation of the activity conducted".

GUIDE TO THE IMPLEMENTATION OF THE LEARNING ACTIVITY

Group to which the activity is addressed:

Skills of the group:

◊ related to the task;

◊ related to new technology;

◊ other competencies required.

Participation of other teacher/learners:

Place where the activity will be done:

◊ in the usual classroom;

◊ in the computer classroom;

◊ in another place.

ANALYSIS OF ACTIVITY

What is the context of the activity? (place of the activity in the curriculum)

What are the specific objectives of the activity/learning unit?

What will the learner have to do?

How will the activity fit to the different learners?

◊ help for the most difficult tasks;

◊ complementary exercises for the most performing learners.

Which learning strategies will be used?

◊ large group;

◊ small groups;

◊ support of experienced learners to small groups;

◊ individual support;

◊ others.

How will the achievement of objectives be assessed?

Which resources will be utilised?

◊ related to the task/subject;

◊ related to technology.

How will resources be accessed?

◊ through Intranet;

◊ through direct access to Internet;

◊ through files or photocopies previously prepared.

Which software will be utilised?

Which sites will be accessed?

GUIDE TO THE EVALUATION OF THE ACTIVITY CONDUCTED

What has the activity given to your learners (in positive and negative)?

◊ with regard to the specific task assigned?

◊ with regard to technology?

Have you achieved any other objective?

Which learning problems occurred? Why?

What would you change if you had to do it again?

What consequences will this experience have in the teaching/learning process that you organise with your learners?

PART TWO

ACTIVITIES

1) Starting from the examples and clues given in the Part One, think of your classroom activity and:

a) describe synthetically, using the table below, how you are used to facing the following didactic aspects:

Favour individualised and flexible learning and learning by discovery

Promote pupils' active and autonomous attitudes

Stimulate group-working

Differentiate activities to deal with special needs

Sustain motivation

Respect different learning styles

Respect different learning paces

b) Show, the table below, where ICT could help you to improve the strategies used by you up to now:

Favour individualised and flexible learning and learning by discovery

Promote pupils' active and autonomous attitudes

Stimulate group-working

Differentiate activities to deal with special needs

Sustain motivation

Respect different learning styles

Respect different learning paces

2) Which possible uses of ICT you could do in the short term, on the basis of the competencies and means which are available to you?

3) At national level a FORUM about "learning styles..."has been set up. If you think to be able to give some contributions or to find there some solutions to problems you may consider common, we invite you to visit it.

UNIT 2: ICT AS A SUPPORT TO TEACHERS' COLLABORATION

The present unit will give you elements to let you think about how ICT can encourage on-line collaboration among teachers.

Particularly, it will explain you how collaboration may help you to:

- ◊ **favour** information exchange;
- ◊ **allow** sharing and development of knowledge among teachers and **solve** daily teaching problems;
- ◊ **develop** inter-disciplinary problem-solving and project-based activities for pupils (e.g. materials and test on a given subject);
- ◊ **analyse** different ways of introducing a new content into previous curricula.

In the part one of this unit, the different aspects will be analysed by providing readers with many examples.

*Time (study + activity) = **3 hours***

Read through the first paragraph for some basic concepts on collaborative/co-operative learning.

INTRODUCTION

CO-OPERATION IN SOCIAL SCIENCE AND WHY IS IT INTERESTING FOR LEARNING PURPOSES?[1]

"Co-operative learning" is a fairly new concept, certainly as a way of thinking and conducting the educational process. Co-operation in learning is not in itself new, but the idea of "co-operative learning" as a particular system of learning is. But what do people mean when they talk of co-operative learning? And what are the outcomes and benefits to the learner of co-operating with other learners?

The act of co-operation is something which is deeply embedded in western societies. It seems to be a fundamental aspect of our every-day lives that people co-operate, although we do make choices about when to co-operate and with whom.
The nature of co-operation is something which social scientists are interested in analysing and researching. Argyle (1991, p.15) defines it as, "acting together, in a co-ordinated way at work, or in social relationships, in the pursuit of shared goals, the enjoyment of joint activity, or simply furthering the relationship." This is a fairly wide ranging definition that can be useful in thinking about the nature of co-operation in learning situations. It emphasises the role of groups of people in co-operative acts and points to the wider social dimension of co-operation (....).

Co-operation is usually analysed in game theory by means of a non-zero-sum game called the "Prisoner's Dilemma" (Axelrod, 1984). The two players in the game can choose between two moves, either "co-operate" or defect". The idea is that each player gains when both co-operate, but if only one of them co-operates, the other, who defects, will gain more. If both defect, both loose (or gain very little) but not as much as the "cheated" co-operator whose co-operation is not returned. The whole game situation and its different outcomes can be summarised by table 1, where hypothetical "points" are given as an example of how the differences in result might be quantified.

Table 1: outcomes for actor A (in words, and in hypothetical "points") depending on the combination of A's action and B's action, in the situation of "prisoner's dilemma" game. A similar scheme applies to the outcomes for B.

Action of A/Action of B	Co-operate	Defect
Co-operate	Fairly good [+ 5]	Bad [- 10]
Defect	Good [+ 10]	Mediocre [0]

The game got its name from the following hypothetical situation: imagine two criminals arrested under the suspicion of having committed a crime together. However, the police does not have sufficient evidence in order to have them convicted. The two prisoners are isolated one from the other, and the police visits each of them and offer a deal: the one who offers evidence against the other one will be released. If none of them accepts the offer, they will be in fact co-operating against the police, and both of them will get only a small punishment because of the lack of proof.

[1] This part is drawn from D. McConnnell "Implementing computer supported co-operative learning " Kogan Page Limeted, 1994, pp.12-15

They both gain. However, if one of them betrays the other one, by confessing to the police, the defector will gain more, since he is released; the one who remained silent, on the other hand, will receive the full punishment, since he did not help the police, and there is sufficient proof. If both betray, both will be punished, but less severely than if they had refused to talk. The dilemma resides in the fact that each prisoner has a choice between only two options, but cannot make a good decision without knowing what the other one will do.

Such a distribution of losses and gains seems natural for many situations, since the co-operator whose action is not returned will loose resources to the defector, without either of them being able to collect the additional gain coming from the "synergy" of their co-operation. For simplicity we might consider the Prisoner's dilemma as zero-sum insofar as there is no mutual co-operation: each gets 0 when both defect, or when one of them co-operates, the defector gets + 10, and the co-operator - 10, in total 0. On the other hand, if both co-operate the resulting synergy creates an additional gain that makes the sum positive: each of them gets 5, in total 10.

The gain for mutual co-operation (5) in the prisoner's dilemma is kept smaller than the gain for one-sided defection (10), so that there would always be a "temptation" to defect. This assumption is not generally valid. For example, it is easy to imagine that two wolves together would be able to kill an animal that is more than twice as large as the largest one each of them might have killed on his own. Even if an altruistic wolf would kill a rabbit and give it to another wolf, and the other wolf would do nothing in return, the selfish wolf would still have less to eat than if he had helped his companion to kill a deer. Yet we will assume that the synergistic effect is smaller than the gains made by defection (i.e. letting someone help you without doing anything in return).

The problem with the prisoner's dilemma is that if both decision-makers were purely rational, they would never co-operate. Indeed, rational decision-making means that you make the decision which is best for you whatever the other actor chooses. Suppose the other one would defect, then it is rational to defect yourself: you won't gain anything, but if you do not defect you will be stuck with a -10 loss. Suppose the other one would co-operate, then you will gain anyway, but you will gain more if you do not co-operate, so here too the rational choice is to defect.
The problem is that if both actors are rational, both will decide to defect, and none of them will gain anything.

"The main results of Co-operation Theory are encouraging. They show that co-operation can get started by even a small cluster of individuals who are prepared to reciprocate co-operation even in a world where no one else will co-operate. The analysis also shows that the two key requisites for co-operation to thrive are that the co-operation be based on reciprocity, and that the shadow of the future is important enough to make the reciprocity stable. But once co-operation based on reciprocity is established in a population, it can protect itself from invasion by uncooperative strategies" (Axelrod, 1990, p173) (...).

In the very broadest sense, co-operative learning involves working together on some task or issue in a way that promotes individual learning through processes of collaboration in groups. It is, "the opportunity to learn through the expression and exploration of diverse ideas and experiences in co-operative company. It is not about competing with fellow members of the group and winning, but about using the diverse resources available in the group to deepen understanding, sharpen judgement and extend knowledge (Cow and Reduce, 1988, p.13).

(....) Co-operative learning is process-driven, i.e. those involved engage in a social process and have to pay attention to that process in order for them to achieve their desired end point. It usually involves people working in groups. They may be group "products" towards which the learners are working; co-operative learning can give rise to "products" which are not achievable by people learning on their own. And they may be in the group helping each other deal with their own individual learning concerns."

Within the context of ODL forms made available through the use of ICT, in the **Collaborative Learning** scenario, the activities arise when a group of people share the same goals, interest, needs, etc., and decide to work on these together. The trainees can also work together on a subject proposed by their trainer(s). In a first virtual meeting (using e-mail, a created news group, a discussion forum or a audio/video-conference) the group settle down their ideas, the scope of their work and the activities to be carried out to achieve their initial goals. From there on all the participants will contribute to the final product, which can be, for instance, a multimedia tool, to deliver in the Web or not, or a forum with the results of the discussion.

Thisdynamic communication flow will take place one-to-one, one-to-many and/or many-to-many. Each participant will be able to send his/her own messages and read or answer other participants' messages. From this point, dialogues or discussion fora will arise, using the technologies mentioned above.

Although all the persons enrolled in the project can and must be agents and end-users in their own and the others learning process, sometimes there should be an anchorperson, often the trainer him/herself or an expert, whose main task will be to play the role of a moderator maintaining the discussion, suggesting new subject matters, new directions for information search or new questions related to the work that is being done, selecting the messages or the joining of new participants. Theoretically, there are no clearly pre-defined objectives and, thus, core content or they are determined in a very global way; however, the existence and the role played by an anchorperson gives the trainer(s) the opportunity to guide the follow-up of the work to his(their) pre-defined but yet not clearly stated directions/objectives.

A typical way of giving focus in collaborative learning is to refer to the representation of existing competencies among the collaborating learners and of new competencies developed through the exchange of experience related to different contexts. This method would normally work at best among a relatively homogeneous professional group: school teachers of the same discipline are one of the most frequently mentioned cases to suggest collaborative learning, but also teachers of different disciplines facing a common problem may contribute a good group.

Collaborative distance work gives trainees/teachers the opportunity to leave behind the traditional stand-alone position without having to find a common space and time at the expense of professional and family duties. This scenario can make things much easier for teachers, either if they are working in big schools of busy cities or small schools in distant isolated places. It brings together, in a virtual environment, persons who do not have to travel to that effect and who can meet at their own convenience whenever they have time and feel like doing it. It means that the work is normally group-centred without any constraints concerning time, space and schedules, except for the cases in which real-time technologies are exploited. In this scenario the trainees support each other, but always having the opportunity to turn to the trainer(s) for special help. For instance, if someone gets lost or joins the group at a latter time, he/she can at any time rely on the trainer(s) who will set him/her in the right direction.

In conjunction with the self-evaluation and the hetero-evaluation elements, there is - in the collaborative scenario - a third evaluation instrument, based on collaborative work, that is the so called co-evaluation. The exchange and improvement of the work done collaboratively and its results can be a co-evaluation element very useful for everybody. This means that at various stages during the learning process as well as at the end of it all the participants critically analyse not only what they have achieved but also how they have achieved it. The co-evaluation of the processes in this scenario proves to be the most important evaluation component. Consequently, there are several evaluating agents, tutors, colleagues and trainees who interact in this function through the learning material as their connecting point.

PART ONE

COLLABORATIVE LEARNING FROM THE ICT PERSPECTIVE

Though new learning approaches and problematics make teachers aware of the need to work together, to share ideas, knowledge and learning strategies, the technology available in the TRENDS pilot project will make interaction a real need.

As Kellogg and Viehland (1995) suggest "Internet develops according to personalised interaction in such a way that previous technologies and isolated applications would have never been able to conceive and anticipate".

The scenario of collaborative learning allows teachers to meet new colleagues who can share the same interests and goals, and develop common projects beyond the constraints of place and time. This scenario gets people of different cultures and languages nearer, it enhances dialogue and helps overcoming cultural barriers.

In a collaborative learning scenario teachers may take part in different activities, among which:

- ◊ to search and share updated information from libraries, research centres, magazines, journals, etc.;
- ◊ to develop on-line projects;
- ◊ to create subject-related groups and develop new information and knowledge through the exchange of experience.

ICT AS A WAY TO FAVOUR INFORMATION EXCHANGE

The collaboration among teachers will provide the group with an easy access to different information, experiences and materials.

"The construction and management of what we term a "common information space" has, in our view, been somewhat neglected, despite its critical importance for the accomplishment of many distributed work activities. Here the focus in on how people in a distributed setting can work co-operatively in a common information space - i.e. by maintaining a central archive of organisational information with some level of "shared" agreement as to the meaning of this information (locally constructed), despite the market differences concerning the origins and context of these information items. The space is constituted and maintained by different actors employing different conceptualisations and multiple decision making strategies, supported by technology." Schmidt & Bannon (1992)[2]

ICT (in particular technologies for Computer Mediated Communication, the World Wide Web and Desktop Multimedia Conferencing Systems) enhance teachers and students communication and exchange of information.
As a communication/collaboration channel, the ITC prove to be a powerful learning tools through which teachers and learners can work collaboratively on the creation of a shared product in the same physical location or at a distance.

For example teachers may find useful to:

- ◊ develop a database on a specific topic, which represents a shared information tools within the participants;
- ◊ create a "forum" on a subject matter in which colleagues coming from different countries and contexts and having different backgrounds are requested to presents their experiences;
- ◊ create a "common virtual space" where information on materials, news, interesting events, conference papers are located and accessible to all.

The exchange of information thanks to ICT is possible one to one, one to many or many to many and both in real-time interaction as well as in asynchronous interaction.
The meaning of "real-time interaction" is to make people share the "same situation/event" by giving them the possibility to express themselves directly.

"Asynchronous interaction" is more a tool for a collaborative learning at distance and has the following advantages:

- ◊ participant can choose the best moment to access the net;
- ◊ participant can analyse the documents and materials developed by the others and to draw own materials when he/she feel ready to do it;
- ◊ it will be possible thank to some specific software tools to structure and organise the communication flow and diminishing the complexity.

It goes without saying that the exchange of information is the first requisite for any activities through the net.

ICT AS A WAY TO ALLOW SHARING AND DEVELOPMENT OF KNOWLEDGE

[2] L. Bannon, S. Bødker "Constructing Common Information Spaces" Papers reports.

AMONG TEACHERS AND SOLVE DAILY TEACHING PROBLEMS

The bottom line which need to be emphasised is that, on the one hand the increased number of teachers' training experiences using ICT and ODL methodology and on the other hand, the achieved results have shown the efficacy and the appropriateness of these media and of the methodology applied for in-service training actions.

As far as the "teachers community" is concerned, two are the main factors which have to be underlined: on the one hand, participation in collaborative environment provides the teacher with access to a "community of learners" made up of colleagues with different background, knowledge, experiences, beliefs, approaches. It also provides teacher with a structured body of knowledge relating to a particular and developing subject area in an organisational context. It is through the interaction with these various components and, in this case, reflection on own experience, that teacher develops and expands his/her own awareness and understanding of this subject area ... (and) moves towards a greater understanding of the assumptions on which the beliefs about training and development are based.

On the other hand, the possibility of remaining in work-place gives the possibility to experiment actively the implications of concepts in new situations and this leads back into the concrete experience which again generates further observations, reflections and generalisations, so the process continues in a spiral fashion.

In a project based activity is necessary to adopt team-teaching approaches, where there is broad agreement over roles and all members of the team have a clear idea of what is expected from them.

Some experiences in using ICT for training teachers and trainers are presented within this section. It goes without saying that these experiences have been chosen as examples of learning through the net.
In particular:

Example	why has been chosen
Polaris	is a training course for teachers delivered at distance based on collaborative learning
Differentiated teaching	is a training course for teachers in which the topics are suggested by the teachers according to the real problems they are facing in daily classroom-activities
Disruptive students: answers to the problem	It is a possible path/project to carry out for solving a specific teaching problem (as disruptive students) based on the collaboration among teachers

Example 1: case study - project POLARIS -telematics for in-service training: "tutor in rete" and "telematica e didattica"

Provider

CNR - Istituto di tecnologie Didattiche - via De Marini 6, Torre di Francia - Genova

Context of reference

Project Polaris is born out of the co-operation between "la Direzione Generale dell'Istruzione Tecnica (Div. II)" (DGIT) of the "Ministero Pubblica Istruzione" (MPI) and the "Istituto Tecnologie Didattiche" (ITD) of the CNR from Genova for the experimentation of a particular method of in-service training of trainers based on an intensive use of telematics resources according to the approach to the so-called on-line education or ODL of third generation..

It is a process in which the telematics connection among all the actors (teachers and pupils) allows to build a proper and real learning community to cancel the isolation of a single student and value his/her relations inside the group.

The project Tutor in rete (Tutor on-line) has been the first project developed in the framework of the initiative POLARIS, followed by Telematica e Didattica (Telematics and Didactics) and "Fiori Blu" (Blue Flowers).

Objectives of the co-operation

Trough a succession of experimental activities, the co-operation aims to:

- ◊ define methodologically the proposed model of training and on-line assistance of teachers and validate its effectiveness through the supply of a succession of on-line courses based on this specific approach;
- ◊ define a training package for the so called "tutor on-line" (strategic figure of the on-line education), that is also based on the on-line training techniques and validate its effectiveness through the supply of a pilot course;
- ◊ define criteria to design the model which enables the MPI to manage both tutor training and to design and conduct further on-line initiatives.

Regarding the figure of the tutor, it is worth noting that Polaris does not foresee a cascade training mechanism (training of a first group of tutors that will afterwards train others on the same methodological/training context and so on). In Polaris, in fact, the tutors will be introduced in a specific method of design and management of ODL. These methods could easily have different natures that should not be necessarily linked to the specific training competencies of these tutors.

Pedagogic Dimension

◊ ***Structure and organisation***

In POLARIS, ODL can be considered both a learning object and a training support instrument. The projects which have been surveyed adopted a methodology based on collaborative learning.
All the courses lasted about 5 months. The duration is, however, indicative as it includes trainers' holidays.

The commitment the trainers were asked for is of about one hour every day, mainly on-line, in order to work with others and to make exchanges.
However, if we also consider the time dedicated to e-mail and exchanges, this time might have been longer.

Both projects *"Fiori Blu"* and *Telematica e Didattica* had 45% of the time dedicated to virtual classrooms and 40% of the time to group work sessions, while only 10% of the time was dedicated to self-learning from didactic materials. A final 5% was used for face-to-face lessons (a 2 day meeting is organised to introduce the trainers into context, communication setting and use of computer conferencing) and for self-learning from on-line resources.

The whole courses were at distance. It is worth underlining that most teachers were connected from their own homes: teachers have, in fact, the habit of working and developing a part of their own activities at home.
The didactic strategy adopted aimed at familiarising the teachers with the available tools: it was a training strategy that cannot be separated from the function of tutor support, use of communication instruments and animation of debates.

The debate was shaped as a sort of brain storming or collaborative learning starting from a common theme: the problems connected with the adoption of the approach in professional activity (integration of the course in professional activity).

The projects were not only based on *collaborative learning* but also on *project learning, solving problems and constructivism.*
After one third of the learning path , in fact, there was a phase of brainstorming about the problems connected with the contextualisation. This was the first stage of the project work. At the end of the path, the projects had to be completely implemented in the classroom. The work of the group was developed at two different levels, local and on-line.
Schools' and teachers' selection was different in these two projects.
In the project *Tutor in rete,* there was a selective choice of tutors that had already worked with these themes and who were familiar with it.

In the project *Telematica e Didattica,* there was a sort of on-line "call for participation": it has been a more democratic procedure based on criteria like: being part of Technical Education, being part of the same Class Council, and finally, presence in the group of at least one person able to operate on-line (no previous training was initially foreseen for the use of on-line techniques and instruments: the tutor had to take care of computer literacy of other members of the group).

70% of the participants did not have previous on-line experience.
The course foresaw the development of competencies that have more to do with methodology than with use.
The course was articulated in stages (centred on a "cluster" of main subject areas having a consistent duration) and in modules, centred on a single subject and to be used in a flexible way. Inside these forms there was a discrete flexibility for the trainers.

◊ ***Ways of accessing resources and using technologies***

Technology has performed different functions:

- ◊ the mode of communication between tutor and pupils and pupils among each other;
- ◊ the distribution channel of information and materials.

In a system based on computer conferencing as a mode of access to resources, the main difficulties were centred in the difficulty of the trainer to interact always at a distance. The support system could be mended by introducing periodical meetings and audio and video conferences.

Example 2: Case study - Differentiated Teaching

Provider

TESS NETWORK - Svienget 2, Denmark

Context of reference

The course, developed for the first time in 1994 and re-proposed in the consequent years, is addressed to teachers of primary and secondary school. This experience represents a reply to changes occurred in Danish school because of the massive introduction of handicapped pupils and the innovation of the teachers' national curriculum, which foresee the use of new technologies in classroom activities. The course organised by TESS involves teachers of 5 European countries: Norway, Sweden, Iceland, Ireland and Denmark.

Pedagogical Dimension

- ◊ ***Objectives***

  The course is addressed to teachers and aims at developing competencies on new learning technologies and differentiated learning methodologies.

Structure and organisation

The course is structured in :

- ◊ six video-recorded lectures, working group
- ◊ tele-conferences
- ◊ classroom-based activities

The recorded lectures are watched by teachers and commented.
The tele-conferences deal with teachers' concrete topics and issues, while telematics experts are called to give support and consultancy.

The topics of video-conferences are suggested by the teachers according to the real problems they are facing in daily classroom-based activities. Moreover, the teachers have also to work on a personal specific project agreed with their tutor.
Peculiarity of this experience is that each group of teachers from one school takes part in the course collaborating with at least two schools from two different countries . The

methodology adopted makes collaborative learning, problem-solving, collective development of competencies and contextualised learning easier.

The option was for Open and Distance Learning , since it allows dialogue and continuing exchange of experiences, while teachers from different countries can work and collaborate together.

◊ ***Degree of flexibility***

With regard to the training path the degree of flexibility is medium, since the teachers attend the whole course. On the contrary, with regard to study time, place and equipment the flexibility is high. The participants are teachers from primary and secondary schools belonging to the above mentioned countries.

◊ ***Way of accessing resources and using technologies***

The course delivery is extensively based on the use of new technologies. This, since it involves participants from five different countries and lies on dialogue and a continuing collaboration among participants. Technologies represent also a part of contents which are delivered, while their use within the course makes it possible for them to get IT confident.

Example 3: possible project on Disruptive students: answers to the problem

Project's objective: To find answers to the question of how to deal with disruptive students in a school context and to promote the implementation of school experiences based on the found answers.

Target: Educators located in different places working together.

Project's description:

◊ A teacher, X, searches for Internet pages on the subject in order to find the E-mail addresses of those who share his worries and establish contact with them. A group of people sharing the same interests is thus created.

◊ The group can now try to stimulate a first meeting by means of audio or videoconference in order to distribute tasks and assign roles. The group decide to ask for the intervention of one or more experts to help them to clarify the concepts related with the subject.

◊ In a second audio or videoconference an exposition about the subject is made and a first discussion is carried.

◊ The group entails a search for information both using on-line and off-line technologies.

◊ A group of teachers creates a newsgroup or discussion fora to share and discuss the retrieved information. At this stage teachers engage themselves in a discussion covering the subject, and have the opportunity to share knowledge, experience and expertise.

- ◊ A second group designs and develops an Internet page with the results of the discussion and the answers to the group's questions. The same work can be developed in absolute and real time collaboration with two or more teachers sharing the same tool and writing the same document.
- ◊ The solutions to the initial question of how to deal with disruptive students in a school context may now be discussed in different schools with other teachers and disruptive students. Experiences may be implemented and evaluated by the teachers of the initial group.
- ◊ A third audio or videoconference takes place with invited experts to share the experiences made in the teachers' schools and to evaluate the project and its results.
- ◊ The Internet page is improved with the description and results of the experiences led by the teachers.

ICT AS A WAY TO DEVELOP INTER-DISCIPLINARY PROBLEM-SOLVING AND PROJECT-BASED ACTIVITIES FOR PUPILS (E.G. MATERIALS AND TEST ON A GIVEN SUBJECT);

Since it is not possible to present thoroughly all benefits and possible activities which can be carried out through on-line projects, this part aims at providing you with some examples. This, with the view to give you useful lines to work. It goes without saying that interest, motivation, real needs are the main drives to start up successful projects.

"This means project-based learning represents a very different approach from traditional schooling; instead of the teacher deciding what topics are relevant for student and pre-digesting pertinent materials for the students, projects give the students control of the topics they study and ask them to locate and make sense of material pertinent to the topic (...). A variety of terms are used to refer to different types of project-based learning. Examples include the *project exercise* which generally refers to a mini-project; *project component(s)* which covers one or more projects forming parts of a larger course; *project courses* which are courses including a substantial project elements; *project-based courses* which have all their assessment based upon a series of mini-projects; and *project credits* which are courses consisting entirely of one big project, similar to an undergraduate thesis or dissertation.

Two other terms are worth mentioning: *project approach* generally describes a situation where project work is used as one approach among many; whereas project methods (or orientation) refers to situations where institutions teach entirely or very largely through projects, offering students a discovery or problem-based approach to learning."[3]

"The term "project" is used to cover a variety of activities, which can be broken down into four fundamentally different types of inquiry: the literature review which normally entails research in a library; an information search which uses primary and secondary data; empirical research which might involve a survey or case study or an experiment; and design projects that involve specification and/or construction. It will come as no surprise that certain varieties of project work are more common in some disciplines that others, namely:

- ◊ literature review - humanities
- ◊ Information search - all

[3] J. Henry "Teaching trough projects", Open and Distance learning series, Kogan Page, 1994, pp. 11, 13

◊ Empirical research -
  - survey - social sciences
  - case study - education, management, systems
  - experiments - science

◊ Design projects - technology, art and design."[4]

The ***collaborative projects*** could focus on:

◊ a problem to be solved

◊ a question to be answered

◊ an hypothesis to be tested

◊ an innovative activity to be carried out

all related to the use of ICT in the teaching/learning process.

The following examples present some suggestions/ideas on collaborative projects to be carried out by teachers and students.

Example 1: Building a multimedia application about «Water pollution in Europe»

Project's objective: To collect information about water pollution in Europe and discuss its consequences. To build a multimedia tool to be delivered via Web or an Internet page about the subject to increase the awareness to the problem.

Target: Teachers and students.

Project's description:

◊ Via E-mail, identification of the possible partners interested in the subject of the project.

◊ A group of teachers or students, the project's leaders, create a newsgroup, or a discussion fora, or organise an audio or videoconference, to promote the discussion about the subject and the project's plan. Concerning the development of the multimedia tool, the following aspects can be discussed (all the people involved can make suggestions and give ideas for each item):
  1. Multimedia interface.
  2. Sounds - yes or no?
  3. Text - which language?
  4. Contents: which level?
  5. Real experiences in each country.
  6. Links to or references to the Web sites about this theme.
  7. Chemistry issues.
  8. Biological and environment issues. Etc.

◊ After the first discussions the leaders will organise all the information. The work to be carried out is distributed and a first beta version of the multimedia application is developed and distributed to every participant.

[4] This section is drawn from J. Henry "Teaching trough projects", Open and Distance learning series, Kogan Page, 1994, pp.22

◊ In light of the beta version, the collaborative work starts again, for instance, via E-mail or an audio or video-conference, centred in issues like:
1. General feedback about the beta version.
2. Experiences with students of different levels.
3. Impact in common persons.
4. Experts feedback.
5. Suggestions. Etc.

◊ Another «circles» of collaborative work can be done in order to improve the multimedia tool production and distribution, centred on:
1. Money - Sponsors.
2. Future new versions.
3. General evaluation. Etc.

Example 2 : Writing is a pleasure

Project's objective: To observe and reflect upon the writing process of students working collaboratively in peers, to improve their writing skills.

Target: Languages teachers and students.

Project's description:

Note: Since the writing process is a recursive process with frequent reorganisation of the text, the teachers group working in the project must analyse the students work during its development. This requires the use of on-line technologies that gives the teachers the opportunity to follow up the students writing process or the registration in a video cassette of the students' activities. The students working collaboratively may be physically in the same school and working in the same equipment or in different places sharing the same writing tool.

◊ One or two teachers suggest to the students the elaboration of a text of more or less five lines about their city. The teachers in different places observe the students doing the task (or the video cassette). The time spent on the task indicates if the students took time to prepare the task. The teachers may also observe the modifications done by the students. Another important issue to observe is what are the differences between the students' strategies working collaboratively compared to individual strategies.

◊ Using, for instance, E-mail, the teachers decide about the feedback to give to the students about their text. If in the introduction the city is geographically situated, if one of the phrases can be improved in what concerns the morpho-syntactic aspect, if the phrases are clear, etc.

◊ The students are asked to change the text taking into account the provided feedback. The teachers observe and analyse the rewriting process.

◊ The teachers ask to other peers of students to do the same or a similar task.

With the results of their observations and conclusions the teachers, in a fora or in an Internet page, organise a set of different instructions and comments to give to students engaged in a writing task. The instructions and comments aim to help students to improve their writing skills. Some examples are: In the phrase x, the verb and the subject are in agreement? In the phrase W did I really say what I wanted or did I confuse the meaning of the word p?
In an argumentative text: Am I being clear and convincing? Did I clearly state my point of view? Is there a logic sequence in the argumentation? In a narrative text: Are the persons or the places clearly characterised? Is there a logic sequence in the description? etc.

HOW DO COLLABORATIVE ACTIVITIES DEVELOP ?

As it was mentioned in the introduction of this unit, in a collaborative learning scenario activities develop when a group of people share the same goals, interests, needs and decide to work together. In a first "virtual meeting" (by using e-mail, a newsgroup, a discussion forum, an audio or videoconference) the group discusses ideas, the objective of the work and the activities to be conducted. Starting from there, all participants should contribute to the development of a common output that could be, for example, a multimedia product or a new forum with the results of the discussion.

THE CO-ORDINATOR

Though all people involved could and should be actors and users of their own and each other's learning process, sometimes a co-ordinator is required; he/she may be a member of the group itself or someone else. His/her main task will be to moderate and keep alive the debate, by suggesting new themes, new directions for the search of information, new questions related to the work undertaken, to select the messages or the inclusion of new participants. In this scenario teachers support each other, but they always have the opportunity to address the co-ordinator to ask for support. For example, if anyone gets lost or join the group late, he/she may always receive some summary discussion or guidelines from the co-ordinator.

CO-EVALUATION

Co-evaluation is an important device to guarantee good results of collaborative learning. In various phases of the agreed workplan participants critically analyse not only what they achieved, but also how they achieved it. Co-evaluation of processes (rather than outputs) represents the most important evaluation component.

PRACTICAL SUGGESTIONS TO IMPLEMENT COLLABORATIVE WORK AMONG TEACHERS

Possible steps of a collaborative work

When a teacher wishes to propose a collaborative work, he/she may opt for one of the following possibilities:

- ◊ to announce her/his proposal in the newsgroup and wait for other teachers to contact her/him;
- ◊ to address a limited number of colleagues already belonging to a mailing list already active in the TRENDS project, that can share some interest with the proponent;
- ◊ to address individually by e-mail those colleagues that he/she may suppose to be interested.

Once a core of interested persons has been formed, they should agree on a few basic points:

- ◊ title of the work;
- ◊ working and communication language(s);
- ◊ number of participants (if too many people are interested, some independent sub-groups can be formed, with an agreement to keep communication flows);
- ◊ open or closed character of the group (are new members allowed to join once the work has started?);
- ◊ group co-ordinator (if any): in principle, the proponent can be the co-ordinator;
- ◊ how the group will communicate. You can create specific mailing lists for each group in the TRENDS Training Centre. An even simpler alternative is that each teacher of the group creates a special list in her/his e-mail programme. Discussions can take place in a newsgroup or through the chat server;
- ◊ description of the work to be done. It must be clear and concise to avoid confusion in subsequent steps;
- ◊ objectives of the work. In your first collaborative work experience it is adviceable to be modest in objectives setting;
- ◊ milestones: it is important to set intermediate objective to be able to check if progress is made;
- ◊ ways and times for co-evaluation of work done;
- ◊ specifications of the final output of the work to be done;
- ◊ deadline to have the work finished.

CONCLUSION

This unit focused on describing how ITC can support the collaboration among teachers and help them to create a "common information and learning environment", where different experiences, contexts, background and knowledge are shared and become common patrimony for all the group.

PART TWO

ACTIVITIES

Think of your personal experience of teacher and point out:

◊ which topics, relevant to you, ICT should help you to exchange information with other teachers

◊ which topics you would to debate with other teachers to increase your knowledge about it

◊ which daily teaching problems you might solve by using collaborative learning

◊ think about a possible project proposal you might develop with other colleagues, dealing with one or more of the above items and possibly adopting an interdisciplinary approach (e.g. subject related data bases, multimedia presentations). Launch your proposal over the network and start working. In so doing take as a term of reference the examples given in Part One, when planning activities with your colleagues.

UNIT 3:
ICT AS AN ENGINE FOR SCHOOL INNOVATION

The present unit will give you elements to let you think about how ICT can be a key element for the innovation within the school.

Particularly, it will explain to you how ICT may give you effective media to:

- ◊ **enlarge** schools' capacity to respond faster and effectively to different needs coming from different target groups;
- ◊ **allow** people to develop skills which will be useful in all their life and help people to enter and remain in the labour market;
- ◊ **help** schools to provide students with updated and relevant contents;
- ◊ **favour** the shift from a oriented-teacher paradigm to a learner-centred paradigm.;
- ◊
- ◊ .

Time (study + activity) = ***2 hours***

Read through the first paragraph for some reflections on the ICT in the European society

INTRODUCTION

"We are in the midst of a new industrial revolution: that of information technology. We are entering into what has been called Information Society and we can fairly confidently predict that the content and organisation of work - and our very way of life- are set to undergo profound changes. Through education we must equip Europe to adapt to these changes. There are two extremist view of technology to be avoided: it is neither an ogre nor a god. Multimedia, for instance, is not a magic wand. It can help to revitalise education or act as a teaching aid but, however useful, it is only an instrument.

Like any new means of expression it provokes debates, but these should not be turned into technological quarrels. We must make use of new technologies, not idealise them; nor should we underestimate them. We should use them, first because of the very real educational opportunities they offer. Second, because we need to prepare young people for a world in which technology will become increasingly important. Finally, we should recognise that these new technological tools are particularly suited to certain sectors of the population, especially young people from the most disadvantaged backgrounds. These young people often have no interest in books and literature but they revel in the world of images. This is a key issue of equal opportunities."[5]

With the mass of information instantly available in today's "Information Society" and the increasingly greater role played by the media in every facet of our daily lives, *education can no longer confine itself to the microcosm of the school.* It must train our future citizens for their lifelong road of learning by enabling them to develop the strategy necessary to sift through this mass of information for appropriateness, coherence, relevance, and even verity. In short, if we are to neutralise any demons that might escape from the Pandora's box that technological progress has opened, our *educational systems need to become a reflection of the society they serve and teach children to use judiciously society's methods and tools.*

The educational system of the future must become more open, offer more alternatives and fewer hierarchical restraints. Knowledge itself is becoming less hierarchical and today's data support systems provide and ideal opportunity to move the emphasis from "learning by heart" to association-connection network-type strategies. The teacher is no longer "the custodian of the knowledge", his/her ability depends not on knowledge but on the professional skills brought to bear on the learning needs of pupils and his/her capacity to motivate them in their lifelong journey of exploration and enquiry.

ITC can help in the response to meet the challenge of the Information Society by facilitating the individualisation and flexibility of learning. A wealth of past experience has shown this, in primary and secondary education, at university or in vocational training. From now on, it is a question of encouraging and developing products and services which are easier to use and meet the needs of users.

[5] Mrs Edith Cresson "*Information technology: devil or saviour*" Le Magazine for Education, training and Youth in Europe, published by the European Commission 1996, Issue 5

PART ONE

AREAS OF CHANGE

The school is in the centre of the innovation process especially coming from the rapid evolution of the external environment. Many are the elements which show the undergoing changes:

◊ **increase of the culture/education demand by different target groups.**
This element has to be considered in the broader framework of the life long learning. In such a world the old linear concept of education-profession has disappeared. The citizen must become an independent lifelong learner if he/she is to succeed in adapting to his/her new living and working conditions.
More and more adults are returning to educational paths during their life.
Education and training can neither produce a "finished product" nor supply an adequate "stock of knowledge" that he can use throughout his entire working life. Education should therefore no longer consist of the accumulation of knowledge in a teacher-directed environment, but should rather aim at encouraging the learner to develop the skills and strategies which will enable him/her to cope with the complex situations he/she will incessantly encounter. Learning in school must be promoted from level 1 - transfer of knowledge - to level 2 - "learning to learn" in a meaningful environment that the students can carry with him throughout their life.

◊ In the above picture another elements has to be underlined: **the labour market requires skilled people**.
In fact, the last decades are characterised by fundamental and structural changes in industry and economics. These changes lead new management strategies and specific requirements in terms of competencies. The so called "core competencies" (in terms of social, communication and organisational skills) are more and more recognised as key skills. They are the base on which to build and develop other competencies on specific sectors. They are considered "core skills" to enter into the market and maintain the role achieved.
"The challenge facing education today is to implement methods that will succeed in transforming school knowledge into practical competence. It is now generally accepted that the most efficient and pertinent teaching is that which leads learners to solve the problems that they encounter in life and that are immediately attached to life, rather than learning by rote or repetitive exercises. There is a fundamental need to incorporate "doing" in learning, otherwise this learning cannot have its natural outcome in action[6].

◊ **the quality and the ways of learning outside the school are increased.**
The spread of information and communication technologies in our everyday life has broadened the traditional gap between the school and the outside world and undermined the role of our educational institutions as repository of the social and cultural values of society. In addition to formal education, children now have access to a whole range of information sources and channels.. Furthermore the means of transmission of information and knowledge is dramatically transformed.
It has led to an extension of space and anonymity and an overwhelming complexity of the basic rules of life. The individual is finding increasingly difficult to navigate in the labyrinth of knowledge7. If he/she is to succeed in his/her lifelong path of learning he/she needs to master the strategies necessary to sift through this mass of information for appropriateness, coherence, relevance, and even verity.

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[6] Haggis S., L'Education pour tous: les objectifs et le contexte, Monographie 1, Paris, UNESCO, 1993, p. 42 - 43
[7] Deberghes D., De la vie à l'école à l'école de la vie, in Annales des Mines, Paris, 1993, La Formation en Europe, p.59

This can only be achieved if, from an early age, students are encouraged to develop a "network-structured" logic through the mastery of enquiry-based reasoning strategies in a Socratic-type approach whereby they constantly acquire their own knowledge through the skills of deduction, prediction, formulation and verification of hypotheses and the seeking of relationships
Today, in the 1990's, computer has become the machine for all the family, used as much for professional and school work as for cultural enrichment and gaming. The interest shown by families in educational and cultural multimedia reflects the new concerns of parents. On the one hand, parents are conscious that these products offer an alternative to the passive consumption of television programmes. On the other hand, many of them are anxious about their children's futures, and invest in educational products and services in the hope of providing their children with optimum opportunities for professional and social integration. In the same way, that generations of working people are motivated to broaden their horizons and improve their job opportunities by going to night school, an effective application of new technology offers the prospect of work-based training coupled with teaching packages which can be used at home. There is no doubt that educational channels on television and educational software for home computers are going to expand massively in the next few years.

◊ **scientific and technical contents are changing rapidly.**
The basic function of education has always been the transmission of knowledge. However, change is currently taking place at such a rate that an estimated 15 - 20% of the existing knowledge base in many sectors becomes obsolete every year; some estimates claim that two thirds of the technology needed by the year 2000 has yet to be invented[8].

◊ **shift of the attention from the teaching to the learning process.**
Student must be encouraged to discover and perfect their own knowledge-seeking skills that they will use for the rest of their lives. In this context, problem-solving strategies, exploration of resources and autonomy in learning take on far greater importance. They must also be capable of formulating hypotheses on possible solutions to the task in hand, and proficient in the art of collecting, sorting, organising and applying knowledge. In this way, not only do they learn to navigate in a mass of information to extract the knowledge needed, they also develop a greater facility for finding the most appropriate source of information (books, newspapers, etc. remain a major reference resource, even in IT-equipped classrooms) and learn to use their sense of judgement in assessing the value of information obtained. By giving children a greater degree of autonomy in applying basic skills and strategies in their learning, knowledge becomes far more than what teacher says or what they read in a book; the ready-made formulae learnt at school become part of a dynamic process that links school to the outside world, allowing the learner to understand the underlying concepts and know how and when to apply them.

[8] European Commission, Lifelong Learning, in issue 4 of *Le Magazine for Education, Training and Youth in Europe*, Brussels, European Commission, 1995, p. 4

THE ROLE OF ICT IN SUPPORTING AND ENHANCING INNOVATION

If we consider the above mentioned list of changes affecting schools, we can identify a possible role for ICT in accompanying or constituting a central element of the school reactions/innovation strategies. The use of ICT:

- ◊ can promote the development of a permanent aptitude to training and education. Schools, supported by ITC, can design different training and educational paths in order to reach a wider target group (adults, workers, unemployed people, et) and provide them with innovative and motivating materials. ICT can be used to increase access to education by adults who could not (for economic, geographic, physical or organisational reasons) attend full-time course;
- ◊ can develop the ability to apply an active research reasoning method, "learning by doing", to find the right tools and adapt the teaching style to suit the needs of their pupils. Furthermore ICT can enhance skills of deduction, prediction, seeking of relationships, independent formulation and verification of hypotheses, problem-solving strategy, develop creativity, interdisciplinary approaches and communication skills;
- ◊ in schools is the national component to the broad access to media that young people have outside school: it is a way to develop learning methods ad learning-oriented keys to access information;
- ◊ can help (in particular, CD-roms, hypertexts, animation, graphics, ..) teachers to set priorities within courses and give them more power to develop an individual curriculum for students. Furthermore teachers can design relevant and updated materials for students;
- ◊ in school by definition encourage autonomy of learner and provides a broad range of opportunity to practice exploration learning.

NECESSITY TO DESIGN A STRATEGY FOR INTRODUCING AND USING ICT IN SCHOOLS

The previous section focused on demonstrating how ICT supports and may strengthen/accelerate all the major processes of change affecting schools.
It is probably possible to demonstrate that implementation strategy of ODL, which is unaware of its possible implications can well be neutral or even delay the above mentioned changes.

That means that the implementation of ICT in school has to be carefully planned and organised:
not only from a technological point of view (e.g. buying the equipment or organise the access to laboratory) but especially from human resources' point of view. That is why the introduction of ICT should be integrated or embedded into a strategic direction of evolution/innovation already existing in each school environment.

The effort to provide training and information to teachers is a pre-condition for the development of pedagogic uses for ICT. It would allow them to be involved in the evolution of products and services and it would contribute towards the creation of a core group of teachers and trainers ready to advise and support colleagues, on the ground, in the use of new technologies. Teachers must be given the opportunity to develop new learning experiences and new valid models, from which they may build the "new" role of

teachers. They also need to be given the time necessary to learn to use new technologies, sufficient access to resources and the possibility to communicate easily with colleagues who are working on similar projects.

PART TWO

ACTIVITIES

Analyse the innovation within your school:

◊ debate with your TRENDS colleagues in your school about the lines/actions through which some innovation perspective is being carried out in your school and how ICT can foster the process. Please, write down the main issues.

◊ Exchange the information collected in your school with the other schools participating in TRENDS. What is common and what is different in the other schools?

◊ Identify, through the comparison with what is happening in other schools, some elements of "best practice" to introduce and use ICT to support innovation within the school context.

◊ Think about a possible project proposal - related to development and diffusion of innovation -, that you might develop with other colleagues within your school and/or in other schools

ODYSSEAS

Project *ODYSSEAS* (Integrated Network of School and Educational Regeneration in Achaia, Thrace and the Aegean) started in the end of 1996, in the bounds of the broader targets of the Greek Ministry of National Education and Religious Affairs (YPEPTH), aiming at introducing Informatics in schools. The Research University Institute - Computer Technology Institute (CTI) is the main partner in the implementation of the project. The Hellenic Pedagogical Institute (HPI) and the Institute for Language and Speech Processing (ILSP, departments of Xanthi and Athens) are cooperative sponsors of the implementation of the project, while YPEPTH supervises its whole progress. The duration of the project is expected to be 36 months and its total funding comes up to 2,9 million ECUs.

Project *ODYSSEAS* is the succession of similar efforts in the recent past (networks "Akritikos Tilemahos" and "Pilot Network of Schools in Achaia") and owes to utilize the conclusions (both positive and negative ones) drawn from the development and operation of these networks.

The goal of this project is, generally speaking, the design, development and pilot operation of an integrated network of schools composed of approximately 60 school laboratories, which will be probably used by more school units, in the areas of Achaia, Thrace and a part of the Aegean islands with the incorporation and utilisation of network technologies (Local Area Networks and Internet) in order to support teaching, upgrade the cultural level of pupils and support various administrative needs of the educational community.

More specifically, the following activities are expected:

1. *Infrastructure Creation.* About 60 school laboratories will be supplied with modern computer and network equipment. An especially designed network architecture will ensure the needed credibility with the minimum possible functional cost. The schools will get connected with each other and will have access to international network services and Internet.

2. *Training of the teachers and implementation in schools.* The teachers will be not only centrally, but also inside the schools, trained to the use of the new technologies, joining a continuous training program consistent with the basic ideas of educating teachers within the programme E.P.E.A.E.K. of the Greek Ministry of National Education and Religious Affairs.

3. *Development of network software and services.* New tools and software products will be developed and already existing ones will be properly adjusted in order to supply important educatonal aspects of the network, like cooperative work among children in areas faraway from each other. Also, network services will be developed and supported for common use by all schools, like selective access to educational links worldwide and communication between pupils and teachers.

4. *Evaluation of the results.* The results of each operation stage will be evaluated from a pedagogical, technological and social point of view, feedbacking the tasks of the other stages. External international evaluators will participate in this task.

The nature project is a pilot one from a technological, organizational and educational point of view, for the following reasons:

- Organizationally, it is the necessary transitional step between the elementary network of a few tens workstations (totally about 80 right now at 5 not-connected with each other networks) and the one of the tens of thousands workstations connected in a single network, which are required for the full extension to the whole elementary education (about 40.000 workstations needed).

- Technologically, it is the necessary transitional step to prove the viability at a low functional cost and satisfactory availability of computer networks in a wide range at the school unit level (a whole laboratory and not only a single workstation) and at a territorial level.

- Though there are similar efforts in progress in developed countries (a fact that points out the necessity of the project) the fact remains that the educational goals, but mostly the methods for their achievement, are still internationally under discussion and the available network educational services are at birth.

Project *ODYSSEAS* will be developed, taking into consideration the following modern, basic pedagogic principles:

- *Exploratory learning:* the computer network is used as a means of discovery and not as a store to retrieve information. In no case, computers substitute teachers. The teachers and not the program designers will introduce pupils to the new technologies.

- *Co-operative learning:* The project will be the basic unit of pedagogic exploitation of the system. Co-operative effort, team competition, the catalytic role of the teacher and the initiative role of the pupils and the constructive synthesis of methods and knowledge from different fields are its characteristics. The network adds to all mentioned above, the possibility of communication between groups of pupils (of the same or different schools) or between teachers and the possibility of access to past projects of other groups of the same school, of different schools and to other sources in the Internet. In that way, the network is a means of communication and cooperation in the same school, between schools and internationally.

We must emphasize the special importance of developing network software and services, as necessary preconditions for the substantial pedagogic exploitation of the network and its incorporation in everyday school life. More specifically, the following tasks will be developed:

1. Network study of knowledge objects: as part of the project, analytical scripts of teaching will be designed and the corresponding network software for about 15 studies concerning 3 knowledge objects (for example Geography, Physics, Mathematics, chosen at the first stage of the project) will be developed.

   Each study will include: (a) a script processed in a pedagogic way (educational goals, object, interaction), (b) the necessary software accompanied with a user's manual, (c) instructions for the pedagogic utilization of the provided material and (d) a detailed evaluation of the above in a laboratorial environment and by putting it in practice in class by teachers and pupils.

   The utilization of the network refers to:

   - On-line access to material that either exists internationally (in sites that will be properly chosen) or will be produced within the project and will be hosted at the three central nodes of the network (see development and maintenance of network services later on this page). Additionally, information drafted from the network could be

drained to analysis tools, like spreadsheets and graphing-tools for carrying out further research.

- Access to material containing information of local interest, which will be created in the bounds of the project in every school from groups of children with the appropriate support tools with which they will be provided for this purpose (see development of an environment of cultural studies later on this page)

- Support of cooperative work between groups of children either locally or at remote schools through specialized software (which has already been designed and is utilized in the bounds of another project).

2. Network software for teaching the Greek language

ILSP will develop educational material (which will be available through the network) relevant to the study of Greek language for Greek children who speak Greek as a mother language and for children who speak little or no Greek because they come from a foreign country. Examples of the second case are the repatriated Pontioi who live mainly in Thrace.

The material developed for teaching Greek as a mother language will explore in greater detail the structural and functional rules of the language. In that way, the pupils will be taught the language with its formalism (rules, exceptions etc.). The material developed for teaching Greek as a foreign language will basically concern the elementary structural and functional phenomena of the language and its vocabulary in order to make pupils capable of participating to everyday activities and understanding the other courses taught at school.

Independently of the form the material will be implemented in, it will be presented through World Wide Web pages and pages of "Tilemahos" (a project of HPI based on Lotus Notes), so there is the possibility to use multimedia, which means embodiment of pictures and sound (limited in size). The material will constitute of three basic parts:

- Instructive part: the subject to be taught will be presented here. It will be analyzed according to whether it is addressed to Greek children or to children from foreign countries.

- Practical part: Exercises aiming at a deeper understanding of what pupils were taught at the instructive part will appear here.

- Answers to exercises: this part is anticipated for the continuation of the operation of the network even after the end of its funding. Then pupils will be able to see the answers of the exercises through the network. However, during the funding of the operation of the network, there will be educational stuff who will receive the answers of the pupils by e-mail, correct them, grade them and answer also by e-mail. This will be more vivid and interesting than if the pupils had to correct the exercises themselves based on the correct answers.

The whole material on the network will be available to be printed so that pupils will be able to do their homework even on paper.

3. Applications of cultural studies

In the bounds of the development of tools to upgrade the cultural level within schools, an environment supporting selective access to information on the Internet and material (a

few hundreds of sites all over the world and all proper Greek sites with checked educational information) in subjects like arts (music, painting, dance, theater, cinema), museums and civilizations, environment, institutions, national cultural heritage and recreation (tourist information, sports), that pupils will use in studies wihin their projects.

Additionally, in order to support the environmental studies of pupils and upgrade their cultural level in an organized way, about 10 specific studies will be developed with different objects of cultural content, like environmental pollution, commercial trades, modern means of transportation, prospectives in the use of water resources on earth, appearance of big cities and problems of the way of living, overpopulation explosion, European civilizations and the route towards the European Union and matters of vocational orientation.

These studies will be similar to the corresponding studies of the three knowledge subjects mentioned above, but they will be more oriented towards the use of Internet as a means of retrieving information in order to write reports/surveys. Specialized network software supporting this activity will be designed and developed.

4. Applications of administrative support

The software under development here, which will be supported by an integrated programming of introduction and utilization by the members of the educational community, will focus on the needs of organization, administration and communication of the school unit. The software will operate in the local network of the school and will be connected with the regional headship and through them with the Headships of Studies and Personnel of the second level of Education of YPEPTH. Its design will be a bottom-up approach of the integrated information system of the educational community and, if YPEPTH allows it, it will be an extension of the information system of YPEPTH to the school units.

5. Network services and Internet services

At the main nodes of the network under construction, software providing the following network services will be developed:

- Exchange of multimedia messages between the pupils (multimedia e-mail), through simplified environments and user-interfaces (suitable for the targeted ages). The electronic-mail software will cooperate directly with the study software.

- Electronic bulletin boards and discussions about various subjects of public interest (bulletin boards, discussion lists).

- Thematic electronic libraries for common use by all schools that will be hosted at the main nodes of the network, at CTI (Patras), HPI (Athens) and ILSP (Xanthi). In these libraries educational material will be processed and filed by either the project partners or the schools themselves (children school-works, compositions, issues of local interest, etc.). Such libraries, for example, will contain collections of network links to Greek sites on the Internet (i.e. newspapers, organizations, unions of Greeks living abroad etc.), or to other school networks all over the world where anyone would like to be informed on the educational activities, the way of using computer technology in the educational process, etc.

Pupils can create their own presentations focused on subjects of their interest and make them available for public use. For example, a group of pupils interested in space missions could

collect material from various sites on the Internet, process it and write a guided tour on the subject (including probably a translation of texts from a foreign language to Greek).

Special motives for pupils and teachers, like awarding a prize to the best presentations, are expected to be offered in the bounds of the project to make pupils and teachers occupy themselves with such activities. Furthermore, the on-line participation in distance seminars, discussions and lectures through image and sound (experimentation and evaluation) will be encouraged and mechanisms filtering the access to undesirable sites on the Internet will be taken into consideration.

CTI has already developed tools for spelling check and syllabication as well as thesaurus of synonyms, antonyms, relevant words and relevant expressions of the Greek language. In the bounds of the development of the environment for the cultural studies and basic network services support, CTI will dispose the tools mentioned above and will shape them properly for the presentation creation and Internet access environment.

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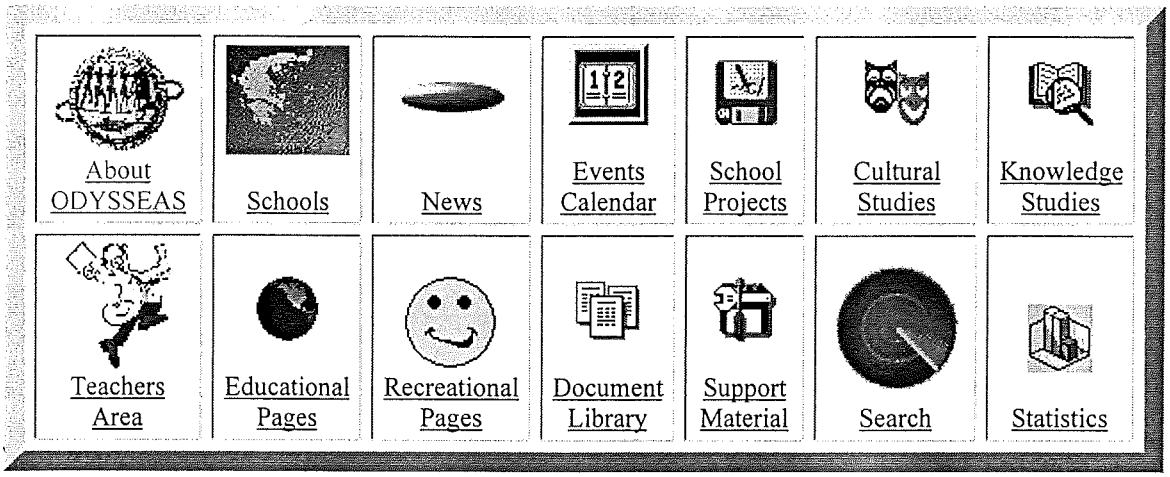

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TRaining Educators through Networks and Distributed Systems

via a well targeted introduction of the use of new technologies

a need for in-service training to help teachers use technology effectively

TRENDS Project in-service training to school teachers of a set of services

educational services of public interest

TRaining
Educators through
Networks and
Distributed
Systems

The TRENDS Workshop

DETAILED PROJECT DESCRIPTION PROJECT MANAGEMENT Public Project Deliverables

Agenda

Partners Workbench

TRENDS User Group

European Teachers Training Network

Telematics Times for Teachers

Partners Workbench User Group On-line Newspaper

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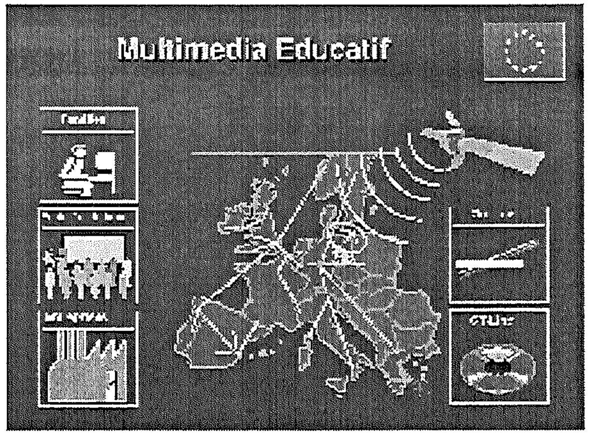
Educational Multimedia Task Force



PART ONE

SITUATION AND PROSPECTS IN 1995

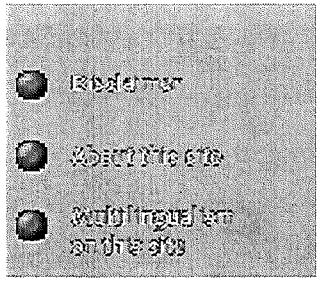
Chapter 1
The Emergence of Educational Multimedia in the Home

Carried along by the growth of multimedia in the field of leisure, "edutainment" (1) and games, educational multimedia is spreading rapidly among the public at large, especially families with children.

HARDWARE IN THE HOME

The first home microcomputers appeared in the late 1970's. They were usually mutually incompatible, but enabled a whole generation to familiarize itself with microcomputing and programming (2). From 1985 onwards, the so-called "proprietary" systems - systems confined to running the manufacturer's own software - gradually lost ground to the PC-MS/DOS standard established by the North American pairing of IBM and Microsoft, which has since dominated the home microcomputer market. In the early 1990's, the microcomputer market found its second wind with the appearance of CD-ROM, offering sufficient storage capacity to make multimedia use a possibility (3).

At the same time, various manufacturers decided to focus their efforts on intermediate products, between the games console and the microcomputer. The best known of these is the CD-I from Philips which, at a significantly lower price than microcomputers of equivalent capacity, aims at the home education, culture and leisure market.



In 1995 the average number of families owning a microcomputer in Europe was 19%, ranking second behind the United States (27%) but ahead of Japan (10%). In this market, the number of owners of multimedia hardware increased very rapidly from 1994 onwards: in Europe, the number of CD-ROM drives rose from 2.7 million to 9 million between 1994 and 1995 (4), and is expected to reach 25% of homes or 35 million units by 1998. However, although prices for multimedia hardware are falling, they are still high enough to deter many households, whereas high-income families are beginning to acquire second PC's (5). In addition, technical incompatibility between the hardware products available on the market means that using multimedia products is still a difficult matter for the uninitiated consumer.

The number of households with a modem enabling them to connect their microcomputers to telematics networks is still low (1% in France and Italy, 3% in Germany, 4% in the United Kingdom) but is increasing rapidly, especially in the United States, where the number of homes with a modem doubled to 15% between 1994 and 1995 (6). The high cost of telecommunications in Europe is doing nothing to encourage family use of on-line services.

USES IN THE HOME

In the 1980's, the microcomputer was mainly a machine for playing games and learning to program, used mainly by adolescents and especially by boys. Today, in the 1990's, it has become the machine for all the family, used as much for professional and school work as for games. The interest shown by families in educational and cultural multimedia reflects the new concerns of parents. On the one hand, parents are conscious that these products offer an alternative to the passive consumption of television programmes. On the other hand, many of them are anxious about their children's futures, and invest in educational products and services in the hope of providing their children with optimum opportunities for professional and social integration.

The best-selling software in Europe, therefore, comprises encyclopaedias and cultural works of European or North American origin (Encarta from Microsoft or Le Louvre, produced in France by the Réunion des Musées Nationaux) or works of discovery for young children (The Way Things Work from the British company Dorling Kindersley, Math Blaster from the American company Davidson or ADI from the French company Coktel-Vision). These are top-end software packages from a technical viewpoint, combining a rich multimedia content - text, images and video sequences - with a high level of interactivity.

Private individuals are also taking an interest in on-line services - services which can be accessed via the telematics networks, usually for a cost of around ECU 15 per month. The number of subscribers in the United States (7) increased by 80% in 1994 (8), and a number of similar services were launched in Europe during 1995: Bertelsmann-America Online, Grolier Interactive (Matra-Hachette), Europe On Line (Burda), Infonie (Infogrames), Telecom On Line (Deutsche Telekom), Italia On Line (Olivetti). Finally, a wide range of educational services are also offered free of charge on the World Wide Web. By the mid-1990's, these services are still rudimentary and usually confined to text, without images or sound. Even so, the availability of broadband networks at affordable prices towards the end of the century should encourage the development of genuinely multimedia services.

STATEMENT NO. 1

- **The emergence of educational multimedia in the home**

  Stimulated by the steady fall in hardware prices and telecommunication charges, the mass market for educational multimedia - both products recorded on optical disks (CD-ROM and CD-I) and services which can be accessed by the telematics networks - cannot fail to grow rapidly. The availability of broadband networks at affordable prices towards the end of the century will promote the growth of new top-end educational multimedia services.

COMMERCIAL SUPPLIERS IN EUROPE: A FEW MAJOR GROUPS AND NUMEROUS SMALL BUSINESSES

To meet the demand for educational multimedia products and services, Europe can call upon a few major industrial groups and a great many very small businesses. The big companies are to be found in five sectors of industry: information technology, electronics, communications, publishing and audiovisual.

The big **IT and electronics** companies are not very active, apart from the Italian Olivetti, which is developing new terminals for the general public (9), and the Dutch Philips, which is a very active producer of products based on the CD-I standard.

The **telecommunication** operators, France Télécom, British Telecom and Deutsche Telekom in particular, and the **cable network** operators too, are becoming more and more interested in the education and training sector: telecommunication tools such as video conferencing are being used in vocational training, while primary and secondary educational institutions are beginning to equip themselves for network access. These operators are exploring new services aimed at families: pilot experiments have been launched in England (Colchester and Ipswich), France (Multicâble in Paris) and Germany (Stuttgart) (cf. Annex 4).

Eager to penetrate the market for the products put out on their networks, some of them are buying production or broadcasting companies (10). Operators of proprietary networks such as America Online, Europe Online and The Microsoft Network, and suppliers of Internet access such as EUnet, are also looking for alliances with software providers.

Among software producers are major **publishing and printed media** groups such as Matra-Hachette in France, with a high profile in academic publishing, Bertelsmann in Germany, Pearson in England, the Egmont Group in Denmark and Giunti in Italy. Operators in the **audiovisual** sector, such as the BBC in Britain, RAI in Italy and La Cinquième in France, are also trying to establish a position in the educational multimedia market (11).

However, the majority of European production of multimedia educational software comes from a very large number of micro-enterprises (12), offshoots of the technological, publishing and sometimes educational sectors, distributed throughout the territory of Europe, and largely dependent on the quality of their local environment. Many of them are specialized publishers or developers operating in the educational institutional market or various niches in the vocational training market. Others specialize in the linguistic and cultural adaptation of multimedia products, most of which are still of American origin, to the various national markets. It often happens that these small producers are bought up by large groups - not only European but also American - looking to establish a foothold in the marketplace or strengthen their market positions (13).

STRENGTHS AND WEAKNESSES OF SUPPLIERS

Commercial European suppliers of educational multimedia have fallen behind those in the United States. A number of factors help to bring about this situation: European demand is limited by the small number of households and teaching institutions which have their own computer hardware. This demand is further fragmented for cultural, linguistic and institutional reasons - with different curricula in each Member State. After all, producing multimedia software is costly in terms of time and investment (14), and to this must be added the high cost of acquiring copyright, which is all the more severe for small businesses in that the purchase procedures are lengthy and complex.

The European SMEs are also handicapped by operating within a less favourable financial environment than their American equivalent. In the United States, where what is literally a risk capital culture has grown up, they have greater facilities for access to capital, especially in the

specialized NASDAQ (15) market. In Europe, on the other hand, investors are still not very aware of the prospects for educational multimedia or the benefits of financing lightweight structures creating products which, through their intrinsic quality (educational products develop less quickly than video games), would have a sufficiently long period available to become profitable.

The American industry, which can draw on a large market, clearly has a substantial economic advantage in tackling the European market. European manufacturers first perceived the fragmentation of the European area as an advantage, enabling them to be best placed to make allowance for specific local cultural features; later they have seen it as a disadvantage, the markets proving too narrow to enable them to recoup high production costs. European industry, then, needs to be able to maintain the advantages of being close to its users without cutting itself off from bigger markets in Europe, Japan and the United States.

To withstand the impetus of American competition, then, it has to rely on a network of small creative enterprises, well established locally, and a few large industrial groups in publishing, audiovisual services, informatics and telecommunications. Cooperation between European producers, whatever their size and whether they are operating in the mass market or the educational or training sectors, is generally perceived as a successful approach (16). It will enable them to acquire the technical or business skills they lack and to extend their market. Small firms, in particular, feel the need to associate themselves with publishers or distributors in order to spread their products beyond their local markets.

The Community programmes for supporting research and development or the preparation of content seem to be suitable instruments for stimulating this cooperation. Simplifying procedures would enable enterprises, especially SMEs, to benefit more extensively from this support.

STATEMENT NO. 2

- **European commercial suppliers**

  European suppliers of educational multimedia are made up of a few large industrial groups and a myriad of small enterprises. Despite its strength, the European educational multimedia industry, apart from a few exceptional cases, is not succeeding in imposing itself inside or outside Europe. Cooperation between European enterprises is perceived as a necessity. From this angle, the Community programmes designed to stimulate trans-European projects have an essential role to play.

Chapter 2
From School to University: Multimedia Education for All

Today, multimedia technologies are available in most European universities. However, there are still numerous obstacles to prevent their use becoming widespread in primary and secondary educational establishments, although pilot projects have already shown the effectiveness of multimedia resources for teaching purposes.

2.1. PRIMARY AND SECONDARY EDUCATION: A HIGH POTENTIAL

In our societies, educational institutions occupy a central position. Their function is to promote equality of opportunity, to propagate democratic values and to strengthen the sense of belonging to a unit - whether local, regional, national or European. This function of socialization and cultural identification is becoming particularly important in a society where family ties are becoming weaker, traditional socialization networks are losing their influence and national frontiers are falling before the globalization of the economy.

In the information society, the risks of isolation and failure to adapt on the part of individuals could, paradoxically, be increased if schools were to fail to ~~adapt~~ their mission to their new environment. For economic reasons, many families cannot spare the ECU 2,000 or so which it now takes to purchase a multimedia terminal. It thus becomes important, to prevent the risk of social exclusion, for schools to be able to make educational multimedia accessible to all. In order to achieve this objective, it is necessary to provide the educational institutions with equipment, to improve familiarity with the use of multimedia resources, and to ensure that teachers are provided with training and information on how to integrate these new tools into their teaching methods.

CONCLUSIVE PILOT TESTS

Studies and experiments have been carried out both in Europe and in the United States for more than 15 years. The available analyses clearly emphasize the potential of educational multimedia. In the United Kingdom, for example, the National Council for Educational Technology summarized (17) these areas of potential, drawing on numerous studies and assessments: motivation of pupils who can make no progress with traditional methods, reduction of the overall risk of failure, stimulation of thought processes and a taste for reading and writing, allowance for individual needs and capabilities, etc. The studies have also identified the conditions under which the teaching potential of educational multimedia can be realized: long-term access to multimedia resources for pupils and teachers, reorganization of space and timetable, teacher training, etc.

In the United States, a study undertaken at 59 schools in 23 different states (18) identified the quantitative and qualitative effects obtained by introducing computers into teaching practice, in terms of both pupil performance and teacher satisfaction. In a sample of 153 schools in Kentucky, it was found that introducing computers into classes had made it possible to halve, between 1981 and 1989, the number of pupils unable to progress.

Nevertheless, progressing from the stage of successful experiment to that of generalization is one of the major challenges confronting European educational systems at the end of this century. The extent of the task is illustrated by the following data: there are in the European Union 67 million pupils, 4.5 million teachers and 350,000 schools.

INSTITUTIONS ARE STILL UNDER-EQUIPPED

Educational institutions began to be equipped with computer hardware as a result of the stimulus provided by the national policies launched in most European countries in the mid-1980's (19). These major equipment policies gave way, in the early 1990's, to supplementary schemes, most of them run on a decentralized basis by municipal or regional authorities. During this second wave, the PC became the general standard in school microcomputer equipment (20). The number of computers per pupil has increased steadily, especially in secondary education.

Despite these efforts, the average provision of computer terminals in educational establishments is still low: in 1994 the average number of computers per 100 pupils was 3 in France and the Netherlands, as compared with 11 in the United Kingdom and the USA and only 2 in Japan. Unlike the United States, where 49% of secondary schools and 30% of primary schools have Internet access, although only 3% of classes are connected (21), the connection rate among European educational institutions today is comparatively low, except in a few countries such as Iceland and Norway.

In addition, a number of the installed computers are technically obsolete. In the United States, in particular, many of the microcomputers in schools are Apple II's which are of little use for multimedia. Similarly, in Europe, some schools are still using first-generation machines, relics of hardware plans dating from around 1985.

In the mid-1990's, however, most countries of the European Union initiated policies to stimulate the introduction of educational multimedia in

schools. In 1994 and 1995, the Department for Education in the United Kingdom allocated an annual budget of MECU 6 for the purchase of multimedia PC stations and CD-ROMs for teaching purposes (22); about twenty pilot projects for the networking of educational institutions were announced. Germany has announced (23) a one billion DM programme to equip schools, this programme which will last five years is also aimed at the development of educational multimedia software , it is co-financed by the Federal State and the Lander Similarly, the Italian Ministry for Public Education announced a plan in 1995 for equipping schools with multimedia stations. Finland, for its part, has set itself the objective of connecting all its educational institutions to the Finnish national network and to the Internet.

The funding requirement for improving institutional equipment levels is very substantial. The necessary investment for equipping every classroom in the entire European Union with a multimedia station would amount to a total expenditure of the order of ECU 4,000 million, while providing one terminal for five pupils would involve an expenditure of ECU 20,000 million (24). These figures have to be seen in the context of an annual expenditure on education which was estimated at ECU 360,000 million for the year 1994.

Apart from these problems of finance, the rapid evolution of technology makes the decision-makers' task more difficult. Thus, 1996 should see the market launch of terminals which, though less sophisticated than PCs, are adequate for serving the networks and gaining access to on-line educational multimedia. These "network computers" (NC), announced by the North American companies Sun and Oracle and the British Acorn, should cost only about a quarter of the price of a stand-alone multimedia PC. These NCs, then, should be of very particular interest to schools, though there can be no question of their entirely replacing PCs in the short term.

EDUCATIONAL SOFTWARE STILL IN SHORT SUPPLY

The policy of purchasing, or supporting the production of, educational software represents, together with the training of teachers, the second principal back-up measure in support of the policies of providing equipment for teaching institutions. It was reflected by what were sometimes very volontarist policies of purchasing and supporting the production of teaching software under the hardware plan of the 1980's (25), then to other forms as the market developed and grew away from "proprietary" technologies. The major countries of the Union tend to leave it to private supply and market forces, while setting up machinery to provide indirect support to national production (26). This approach, however, has favoured the purchase of office software, especially word processing and management tools, at the expense of purely educational products. In the Netherlands and the Scandinavian countries, where the domestic market is too small for a private educational software industry to be created and sustained, the authorities felt it necessary to take a more directly promotional role (27).

In primary education, the most widely used applications include the Logo program (28), the software designed to teach reading, writing and arithmetic, and various reference products such as electronic encyclopaedias and dictionaries. In the secondary section, specialized software is used to teach scientific disciplines, such as curve plotters in mathematics and graphics software for showing molecules in chemistry. Other packages exploit the possibilities of processing sounds and words as a way of teaching languages and music. In pre-vocational classes, the hardware is used to train pupils in the actual technological tools (29). Finally, more and more use is being made of generic creative tools not directly associated with particular disciplines, such as word processors and spreadsheets.

In addition, educational institutions also resort - for lack of anything better - to commercial products primarily designed for family use, the mass market today being the only one to hold out any hope of profits. These products receive a sceptical welcome from teachers, who often find them technically interesting but unsuited to their teaching vocation and to their pupils' needs (30).

Alongside the commercial offer of private publishers, there is a non-commercial offer. The source of this is usually the teachers themselves, who participate as authors, script-writers or advisers in the design and production of multimedia educational products within mixed groups supported by the public authorities. Such structures exist especially in the Nordic countries, where producers who themselves originated in educational circles in each of those countries cooperate with teachers to design and exchange educational products which can be used in classroom (31). This network has valuable experience in taking into consideration linguistic, cultural and educational differences, pooling

resources and making co-productions.

THE ISSUE OF TEACHER TRAINING

The initial equipment policies of the mid-1980's provided the opportunity for many teachers to familiarize themselves with the new computer tools. In most European countries, the initial teacher training course has since included initiation into information and communication technologies. The continuing training needs of teachers today relate to the use of the available hardware and software but also, and more particularly, to methods of integrating them into teaching practice.

The difficulties encountered are of two types. First, in order to be able to train himself during working hours, the teacher has to abandon his pupils and possibly be replaced. This constraint has often led the national authorities to encourage training courses during the school holidays, but only the most motivated teachers agree to attend such courses, which restricts their effectiveness. On the other hand, any training policy designed to reach as many teachers as possible imposes a substantial cost burden which it is difficult for the educational system to bear. In order to restrict this expenditure and increase the flexibility of the services offered, multimedia - as a subject of continuing training for teachers - could also be used as a tool for more flexible, less expensive training.

STATEMENT NO. 3

- **Primary and secondary education: a major potential**

  Numerous experiments have shown the educational value of multimedia. There are several obstacles to the widespread use of educational multimedia in schools: insufficient quantities of hardware, which are often technically obsolete and rarely connected to telecommunications networks; inadequate quantity and quality of educational software suitable for the intended purpose; the difficulty of integrating educational multimedia into teachers' educational practice; teachers who are insufficiently trained and informed. The primary and secondary educational institutions do, however, potentially represent the broadest field of application for educational multimedia products and services.

2.2. UNIVERSITIES: A LABORATORY FOR NEW FORMS OF EDUCATION

The universities have a dual mission: education and research. Multimedia products are used there both as a means for facilitating access to university studies - especially through distance learning - and as a research tool for bringing together inter-university projects and teams.

METHODS OF ACCESS TO EDUCATION AND RESEARCH

The distance learning institutions, and especially the open universities, have for several years been playing a pioneering role both in the use of educational software and telecommunications networks and in innovative teaching, technological experimentation or cross-border cooperation. The Open University in England, the Centre National d'Enseignement à Distance in France, the Open Universiteit in the Netherlands and the Universidad Nacional de Educacion a Distancia in Spain produce a mass of educational materials - printed matter and video films for the most part, but also multimedia educational software.

Most European universities have access to the Internet and to the ISDN (integrated services digital network), and several European countries are planning to connect all their universities to broadband networks from 1996, allowing easier and rapid on-line access to top-end educational multimedia products. Even now, in 1995, broadband networks such as SuperJANET in the United Kingdom or Renater in France provide a fibre-optic link between universities and research establishments which use them in various fields of activity: distance training in surgery,

distribution or retrieval of satellite images, video conferencing or visualization of supercomputer calculations for educational purposes, etc.

Finally, university laboratories are exploring the techniques of simulation or virtual reality in fields as diverse as physics, biology, medicine and algebra. Thanks to the technical and financial support of computer manufacturers, for example, universities and engineering schools (32) are working together to develop teaching modules, especially scientific simulation modules, intended for all their students.

UNIVERSITIES: BETWEEN SUPPLY AND DEMAND

In higher education, the high degree of fragmentation of needs is blocking the development of a commercial market for multimedia software. This is why many universities are setting up software production structures specifically designed for their students and, in some cases, for other universities, most frequently on a non-commercial basis.

Even today, many universities appear as suppliers of services of the World Wide Web. They make available on it free of charge - so far, at least - educational multimedia servers. It is true that in most cases these are illustrated courses which are not very interactive. While German universities are active in the field of biology and British ones in commercial sciences, it is the North American universities that are offering the most sophisticated services, especially in the field of medicine. Among the best known are: Virtual Hospital (multimedia medical manuals from the University of Iowa), Oncolink (multimedia training in cancerology from the University of Pennsylvania), Nuclear Medicine (University of Harvard) and Slice of Life (multimedia educational materials on the human body from the University of Utah).

STATEMENT NO. 4

- **Universities: a laboratory for new forms of education**

  As a general rule, universities produce internally and for non-commercial purposes multimedia educational products for high-level training. They are increasingly turning towards the use of broadband telecommunications networks for the distribution of courses and joint research.

Chapter 3
Vocational Training: Diverse Needs

Vocational training is perceived as an efficient means of combating unemployment and making enterprises more competitive. For this reason, both public authorities and enterprises attach increasing importance to it. In the European Community in 1993, expenditure on vocational training was estimated at 0.5% of the GDP for the public contribution, or ECU 30,000 million, and 1.5% of the total wage bill, or about ECU 50,000 million, for the private contribution (33). Today, both enterprises and the public authorities are trying to obtain greater control of the increase in this expenditure and to improve its efficiency.

EDUCATIONAL MULTIMEDIA IN MAJOR ENTERPRISES

Since the 1960's, major enterprises which are active in the information technology field have been using computer-assisted training to provide

continuing training for their staff (34). Other major enterprises in the tertiary sector, especially in banking and insurance, have followed suit. From the mid-1980's, the spread of microcomputer technology throughout all enterprises has created general demand for training in the use of office tools, spreadsheets, word processors, etc., which can be provided by self-training software.

Despite undeniable successes, the vocational training software industry has not developed at the hoped-for pace. Some sectors, such as banking and insurance, actually saw a gradual withdrawal in the early 1990's. This situation is caused partly by the varied needs of enterprises, which are often highly specific and can rarely be satisfied by standard products, with a few exceptions such as language teaching, marketing and management, and partly to the high cost of developing customized software.

With advances in telematics and a relative fall in the cost of telecommunications, major enterprises have been prompted, in the 1990's, to make greater use of distance learning in order to reduce - considerably, in some cases - the cost of training their personnel internally. For example, by making intensive use of telematics tools, Hewlett Packard in 1994 successfully reduced the daily cost of training a junior executive from ECU 2260 to 1500 (35). Olivetti, for its part, in 1995 was able to shift all the training of its 12,000 maintenance technicians away from the training centres to the workplace and the home.

In other leading-edge sectors, major enterprises are making use of "customized" products, the most technically sophisticated of which are simulators and virtual reality tools. Simulation is particularly useful for training in high-risk activities: nuclear power station maintenance, salvage operations, surgery (36), train driving or flying, transportation of hazardous materials, space operations, etc. To develop these customized applications, the enterprises generally bring in service companies, or set up specialist in-house departments.

Overall, however, the use made by major enterprises of educational multimedia, whether distributed on-line or used off-line, is generally confined to the training of supervisory staff, engineers and technicians.

THE SPECIAL PROBLEM OF THE SMES

As yet, little use is made of educational multimedia for the vocational training of staff of small and medium-sized enterprises (SMEs). Limited by their financial constraints and also because of their particular organisational structures, the SMEs allocate relatively less resources to training in general, and a fortiori to educational multimedia, than do major enterprises. Educational multimedia, both off-line and on-line, because of the flexibility of use which it offers, should enable them to deal more effectively with their training needs. This represents a major industrial and commercial issue for suppliers of educational multimedia, since 2/3 of Europe's employed persons work for an SME.

VOCATIONAL TRAINING BODIES AND PUBLIC LIBRARIES

The vocational training bodies meet the training needs of those who work for enterprises but also of individuals, especially job-seekers. Thus, the Open College in the United Kingdom provides distance vocational training courses for 165,000 students; in France, the APPs (Ateliers Pédagogiques Personnalisés) meet local vocational training needs. Such structures are sometimes called upon to work directly with producers (37). These bodies, whether privately or publicly funded, are resorting more and more to educational multimedia. In Denmark, for example, a network of 130 centres set up by the Ministry of Labour devote ECU 6.6 million each year to developing multimedia courses for vocational training. Overall, however, the vocational training and continuing training bodies are still inadequately equipped with hardware and suitable multimedia resources. Furthermore, these bodies are suffering from the lack of personnel specializing in advising enterprises on the use of educational multimedia.

Public libraries can also be used by persons in search of supplementary training. In the United Kingdom, for example, after a trial period in 11 libraries during 1992, a plan to generalize this service was set up by the British Association for Open Learning: in 1995, 90% of British public

libraries were equipped with a multimedia station and a set of training products, primarily aimed at job-seekers.

STATEMENT NO. 5

- **Vocational training: varied needs**

  Many major enterprises resort to educational multimedia, usually "customized", for training supervisory personnel, engineers and technicians. On the other hand, the use of the technologies is still not very widespread in training other categories of personnel and, generally, for training in SMEs. The vocational training and continuing training bodies are insufficiently equipped with hardware and appropriate multimedia resources.

Conclusion to Part One

The use of educational multimedia is increasing at different rates in the various market segments - domestic users, educational and training systems, and enterprises. There is no interaction between these market segments, and the overall rate of growth is still insufficient to give rise to a genuine European educational multimedia market. As a result, industry in Europe is not enjoying the same economies of scale as it is in America. A priori, however, there is nothing to prevent multimedia products and services from being designed so as to be usable - with a few adaptations - in both a domestic and a school context; nor is there any reason why products used in continuing vocational training should not be used in basic vocational training, with the same provisos regarding adaptation. Indeed, in a society which promotes lifelong education and training, such overlaps should become commonplace.

BROADENING THE MARKETS THROUGH CONTINUITY OF USES

The spread of quality products and services, adapted to suit the needs of families, parents and children as well as those of teachers, trainers, pupils and adult learners, is the basis for continuity of uses and broadening of markets. Aiming at the domestic market while banking on the educational quality of the products and services will help European industry to achieve a strong position for meeting the needs of the institutional market, as it develops. In the long run, this development could have indirect repercussions on the mass market, thanks to the exemplary power which educational institutions exert over families.

RENEWING EDUCATIONAL AND TRAINING METHODS

The multimedia is becoming the focus of a debate on the renewal of teaching methods. Designed in the last century for mass education, they now favour individualized and active learning. Multimedia supports and facilitates this trend. It creates, for the pupil, student or adult learner, an "interactive" environment which offers an immediate assessment of his actions and provides a context for the information accessible through face-to-face or distance learning. Thanks to the telematics networks, it offers multiple opportunities for inter-personal communication. It brings them an additional dimension - a window on the world, and especially on Europe. In particular, the multimedia strengthens the teacher in his function as a mediator, an essential element in the development of the learning process.

Multimedia offers the prospect of the generalization of innovative teaching, for the benefit of the greatest number. In order for this kind of integration into teaching practice to be possible, users' needs have to be taken into consideration at the time when the tools, services and

applications are designed. Conversely, new approaches need to be defined for the organization of learning and its various components: face-to-face teaching, distance teaching, individual or group learning, backed by traditional or multimedia resources. All the actors in the educational chain need to collaborate on their definition: teachers and trainers but also families, managers of institutions or enterprises, students and employees.

Cooperation to ensure better quality and more widespread use of multimedia

Cooperation between European suppliers and users of educational multimedia, in its various forms, is a guarantee of quality in multimedia products and services, and at the same time a condition for their propagation throughout Europe and the rest of the world. Cooperation between manufacturers, major industrial companies and specialized small enterprises, in particular, will make it possible to take advantage of Europe's linguistic and cultural wealth and to propagate it beyond Europe's borders, thanks to the commercial power of Europe's major publishing and communications groups. Partnerships between public actors and private operators will also assist the education and training institutions to equip themselves rapidly with multimedia hardware and software, while benefitting from reduced prices. Finally, owing to the cultural and educational nature of educational multimedia, close cooperation between suppliers and users will guarantee that the products and services are properly adapted to users' real needs. Such cooperative projects should be based on local dynamics and gradually develop on a European level.

The Consortium

Lambrakis Research Foundation

Planet

Pedagogical Institute - [illegible]

Danmarks Radio

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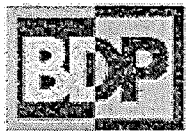
Computer Technology Institute

Scienter



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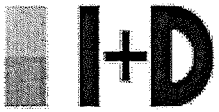

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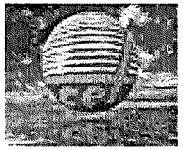

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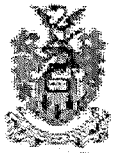

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Monday - 15 September, 1997	
9:15	Registration
9:30	Welcome Agenta of the Workshop
9:45	TRENDS objectives and project progress
10:15	The role of school-leaders
10:45	TRENDS training services
11:45	The role of school leaders
14:00	Workshops - "Case studies" [1]

Tuesday - 16 September, 1997	
10:00	Workshops - "Case Studies" [2]
12:00	Hands-on \ TRENDS training services
14:00	Workshops - "Case Studies" [3]

Wednesday - 17 September, 1997	
10:00	Conclusions from - "Case Studies"
10:30	Lecture Demonstration of the teletraining tool
11:45	Final discussion Feedback from school-leaders Establishment of discussion fora

TRENDS Home Page

Renewing the Progressive Contract with Posterity: On the Social Construction of Digital Learning Communities

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Institute for Learning Technologies
Teacher's College - Columbia University
New York

Introduction

'To educate educators! But the first ones must educate themselves! And for these I write.' (*Nietzsche,* 1875)

Consider interactions between information technologies and educational practice as these play out in the fullness of time. Some events take place in a present tense that marks a short duration - days, weeks, months, perhaps a year or two. Others unfold in a prolonged process that spans a long duration - decades, generations, even centuries. Over such a long duration, innovations in information technologies are interacting with new educational practices to bring about significant changes in human experience. As actors in that drama, educators must determine the human worth of those changes through the character of their practice.

Some critics bemoan the sweep of historic change and wish it could be blocked. Within education that is neither feasible nor desirable. Around the world, a remarkably ubiquitous educational system works well for some and poorly for others. Its elitism and class bias is global, a structural feature of the educational system built over the past four centuries. Educators designed the traditional system to make optimal use of a powerful information technology, that of printed text. In our extended present, the means of communication available to educators are changing rapidly, and educators are now having to determine what they will accomplish with those changing conditions. This essay raises potentialities inherent in the present situation to the level of explicit reflection in order to facilitate their social construction.

Technological Empowerments

Prediction anticipates what will happen in the future. Observation notes what is happening in the present, a present which may extend from the recent past, through the immediate now, to well into the future. Let us observe three things that are happening around us at a rapid pace in our extended present. First, people are converting all the contents of all the world's cultures to digital form, making the results available to any person at any place at any time. Second, people are gaining flexible command of multiple ways to represent information, simulate interactions, and express ideas, extending the reach of intelligence, altering the spectrum of civilized achievement, and lowering thresholds to cultural participation. Third, people are externalizing diverse basic skills - to calculate, to spell, to remember, to visualize, to compare, to select - into the digital tools with which they work, making practical mastery of such skills, once an outcome of education, increasingly a given at its outset. As these changes become evident in practice all around, educators sense that the spectrum of pedagogical possibility alters significantly.

To make a shift in the spectrum of pedagogical possibility clear, consider the history of architecture in the hundred years from 1850 or so. Until that time, throughout history and across cultures people simply did not build tall buildings except for a few towers for specialized ceremonial and military purposes. Then a series of innovations occurred, for reasons quite extraneous to the will of architects, that made unprecedented structures feasible. With new materials like structural steel, reinforced concrete, and plate glass, with new techniques for managing water, heat, light, and air, as well as novel ways of moving people, these unprecedented structures proved so humanly habitable that specimens of them have been built the world around, with great variations of form and function, and with diverse triumphs and failures on all sorts of measures - social, structural, economic, and aesthetic. The new building technologies did not determine, in a strong sense, how any particular city would look, but they did open a wide new spectrum of architectural possibility. Within the range of this possibility numerous cities have developed imposing skylines like New York's, and even Paris, by explicitly adhering to traditional building codes in its central sections, reflects through its conscious restraint one of the possibilities of the new architecture.

Digital technologies are for education as iron and steel girders, reinforced concrete, plate glass, elevators, central heating and air conditioning were for architecture. Digital technologies set in abeyance significant, long-lasting limits on educational activity. Consider how this change in possibility occurs through the three key developments in our extended present noted above.

First, high-speed wide-area networks linking ubiquitous computers to copious digital libraries transform the cultural conditions under which educational interactions take place. Traditionally, the school and the classroom have been places where teachers and students are isolated from the general culture and where information and ideas have been relatively scarce - the textbook is a meager selection of what a field of knowledge comprises, a skilled teacher is a bundle of ignorance relative to the sum of learning, and a school library a sparse collection at best. Networks reaching through the school into the classroom and to the desktop are ending the isolation and substituting a rule of abundance for that of scarcity. Such a new rule is not without its pitfalls, but to cope with these we must recognize that it is a new rule, deeply different from the old. In our extended present, the educational problem changes profoundly, shifting from stratagems for disbursing scarce knowledge to finding ways to enable people to use unlimited access to the resources of our cultures.

Second, new media alter the ways of knowing and the opportunities for participating in the creation of knowledge. Multimedia, and its extension in virtual reality, is not merely a glitzy vehicle for edutainment hype. It is an epistemologically interesting development in our culture. For the most part, the work of thought has seemed located primarily in the manipulation of language, with mathematics and logic through their formal symbolization seen as extensions of more everyday linguistic forms. Multimedia make it increasingly evident that the work of thinking can take many forms - verbal, visual, auditory, kinetic, and blends of all and each. Of course, it is not the case that non-linguistic media are themselves new.

Rather their status as serious means for creating knowledge is rising considerably. Knowledge consists primarily of cultural resources that people can store and retrieve on demand, as the need for it arises. Written, especially printed, media have long had a privileged place in education because they were easy to store and retrieve to suit the needs of users. Work in other media tended to exist in performances and monuments, which did not suit the strategies of random access. Multimedia changes that condition. It subjects a far wider range of communications to the full rule of random access, changing the repertoire of resources that people can store and retrieve effectively and use on demand to serve the needs of disciplined thought and inquiry. People can use digital media both to acquire ideas and to express their thoughts in these diverse ways. As a result, educators will find it

increasingly difficult to favor the linguistic modality over all others and they will need to broaden the norms of academic excellence.

Third, digital technologies expand personal potentialities. Distributed processing and ubiquitous computing may or may not aggregate into artificial intelligence in the strong sense, creating a species of machines that think in a significant way. But they are clearly coming to function as a means for augmenting intelligence with respect to our human intellectual skills. Word processors warn of anomalous spellings as they occur; spreadsheets allow anyone to perform complex calculations quickly and accurately; and databases permit those with good memory or bad to manage information sets that neither could handle on their own. All sorts of more specialized tools greatly lower the skill levels needed to participate effectively in wide ranges of cultural activity. Precision and exactness may become trivial proficiencies because getting it right will be easy, provided one doesn't get it wildly wrong through some accidental error. With regard to such accidental, but sometimes very portentous error, the ability to estimate and guess approximate results, traditionally an educationally suspect knack, becomes an increasingly prized skill. Thus educators are sensing that changes in information technologies can deeply transform the hallmarks of having acquired a decent education. Established answers to the question - What knowledge is of most worth? - may not pertain under the conditions of learning and knowing that emerge with the digital augmentation of human intelligence.

Digital libraries, multimedia, and augmented skills change the limits of educational practice. This proposition is not a prediction, but an observation about the potentialities inherent in communications innovations taking place in our extended present. The basic proposition here is not so much a normative argument that educators should, for one or another reason, adopt the proposition that these three developments are empowering the transformation of educational activity. Rather, the proposition is both more factual, although tentative. We are there, it seems. As educators encounter the changing conditions of communication under production lines and distribution channels. Aroused by advertising, the public finds itself enjoying the benefits of nylons, scotch tape, and Prozac. Variations on this theme of linear application abound - a causal flow moves from the origination of an idea to its elaboration in a plan that provides the specifications controlling the work of implementation, which in turn is followed by the evaluation of results through market returns or stipulated performance measures. This model has great simplicity and people use it to describe diverse forms of activity in technology, science, medicine, industry, government, war, and education.

Albeit simple, this model is not always sound. Historians of technology have been finding more intricate models necessary to make sense of the way that complex technical systems develop. Contemporary telecommunications has not arisen through a simple linear flow from Alexander Graham Bell's patent for the telephone. As a technical system, the telephone required many different people, working at different times and places through different organizations, to solve many different technical problems. It resulted through a distributed accomplishment by diverse people and groups who understood the technical potentials of an emergent telephone system in similar, parallel ways. Further, the emergence of the telephone as a social system required all sorts of people to form understandings of how to integrate use of it into the daily conduct of their lives. Some uses worked, others did not. Slowly, from many trials and differentiated actions, the telephone developed as a system in use from an odd device to a ubiquitous resource in all aspects of everyday life. Virtually every major innovation arises through such many-sided efforts. Confronting such complexities, historians of technology are increasingly displacing the model of linear flow with one of social construction, using the latter to show how major developments arise from independent actions by numerous people, with those actions cohering into a significant

development because they are based on shared understandings of the potentialities implicit in the historical processes underway.

In deciding what to do with changing conditions, educators will engage in the social construction of a new educational system, one that will come about through a diversity of innovations taken here and there by people and groups that share, to varying degrees, a common understanding of what potentialities arise in their world of practice with the new technologies. This proposition may sound amorphous, but it will, if we stick with it, lead to a clear sense of what is to be done. Let us remember Aristotle's wise caution to seek "precision in each class of things just so far as the nature of the phenomena admits. The class of things here in question is the shared comprehension of possibilities arising through the use of information technology in education. We aim to grasp those possibilities in thought and action. In preparation, let us first separate ourselves from two frequent misunderstandings of them.

A common response to changing conditions, whether in education or other domains, is one of passive reaction that arises with the failure to perceive that any new possibilities arise with the changes. The classic instance of this reaction was the way in which early printers crafted books that looked exactly like illuminated manuscripts. Passive reactions attach a timeless necessity to arrangements that are historically contingent. Passive reaction by educators amount to an inert effort to employ new information technologies to make the existing educational system work better, without significant changes in the structural features of that system. This course is fraught with ironies. Applying new technologies to current procedures, expecting them to work better but to remain essentially unchanged, does not lead to significant improvements. Rather, it forces fundamental change from within, without providing a vision of where that change should lead. In this way, educators risk being caught unawares in a cascade of unexpected innovation. We can do better in our extended present by recognizing that the task facing educators is to reconstruct the whole system in ways that will allow it to use new communications resources to overcome the inherent, structural deficiencies of the current system.

To grasp the opportunities inherent in changing conditions, educators need to adopt an active course based on their sense of potentiality for education, but they cannot overly plan that course. The second misunderstanding lies in a compulsion to be unduly specific about the possibilities. As we have implied above, reconstruction of the whole educational system is a supremely complicated process, one that will not come about by promulgating a neat plan and implementing it straight away. As a human experience, education is both an intensely personal process that unfolds over twenty years or more of an individual's life and a ubiquitous social operation that involves billions of persons the world around. It is so impossibly complicated that educators cannot conceptually plan or predictably implement a reconstructed system. They can, however, shape an emerging system over time, effectively constituting key features of it through a process of social construction, if they develop a concerted sense of shared directions. Coherent historical change wells up from many different acts that move parallel in time, spontaneously coordinating around an understanding of possibilities, at once emergent yet shared. Educators will best define the pedagogical opportunities arising with changing conditions by concerting independent actions, by developing shared understandings and purposes, by crafting a new common sense of where they stand and what they can do.

(...) So far, we have been asking what educational options the new technologies significantly empower, and how they do that, and why they have those empowering effects. To the first question posed above - What sorts of pedagogical options do educators sense the innovations in digital technology are empowering? - we are suggesting the emergence of a widespread, shared

understanding among educators that the innovations are empowering a significant transformation of the educational system. Engagement with the new technologies engenders among educators a basic understanding that the fundamental problem to be addressed through education, the range of resources useful in addressing it, and the characteristic results of addressing it well are all open to historic transformation.

We are ready now to seek, second, a clear agenda of educational work and innovation that these newly empowered options are enabling educators to pursue effectively. The first topic has concerned the ways that educators perceive the limits of practical possibility to change as a result of technological innovation. The second concerns how new ranges of possibility lead educators to form a renewed and altered spectrum of public and professional imperatives for action. In the pages that follow, we offer an interpretative response to these questions. As educators perceive digital technologies to empower new options, what agenda for sustained effort do they think will make these options have results of significant human value?

Throughout the course of this discussion, we will be concentrating on a rather sharp, binary opposition between traditional education and the new system under social construction, without extended attention to the particular steps within the middle ground by which circumstances metamorphose from one to the other. Action in the midst of real circumstances always consists in small, concrete repetitions or innovations, not grand departures. How is it then that significant historical change occurs? It is through the cumulative impact of small innovations in the midst of real circumstances, which, when oriented to a transformative possibility, can amount in the aggregate to the grand departure. Without an orienting vision, the likelihood is much higher that actions will consist primarily in the small historical repetitions, with their aggregate amounting merely to an extension of the status quo. Seeking change, we concentrate on the binary opposition, therefore, to free ourselves from the weight of historical inertia, enabling us to develop more and better concrete innovations in specific situations.

Revolutions take place simplistically on the level of guiding principles. Continuity asserts itself as people engage the obdurate details of life. The social construction of historical change comes about in a middle ground as many people in many situations develop similar understandings of the potentialities inherent in an historical situation. Acting on that understanding, they independently work in concert towards distant and demanding purposes. In this way, powerful goal-directed actions emerge in history. As new communications technologies take hold in practice, educators sense that new developments become feasible through them. As diverse educators act in diverse ways on the basis of this shared sense of new potential, they begin to change the character of general practice. Can these changes aggregate into an emerging new form of education? (...)

Towards a New Education

New information technologies are opening the system to new possibilities as surely as new building technologies did to architecture some hundred years ago. But the technologies do not design new practices for us. People, acting in the face of uncertainty, must determine what they can make of these emerging possibilities. Many groups and interests, pursuing many divergent inspirations, are vying for command, and a kaleidoscope of coalitions establish, through a diversity of initiatives, emerging norms of practice. Do people working in intellectual institutions and knowledge industries - the world's schools, colleges, universities, research labs, libraries, museums, and professional offices - share a sustained agenda with which to shape newly emerging educational practices? In the remainder of this essay, we outline a positive response to this question - again a response that does

not aim to persuade others what they should think about the matter, but does instead claim that the response is the way we do think about the matter when we reflect upon it, to suggest in a tentative, factual way that educators do indeed share a powerful agenda.

Other groups, aside from the knowledge industries, may play a significant part in determining the course of educational innovation. Many in journalism and commerce avidly attend to the entertainment industries as potential sources of educational innovation. They may be right in viewing practitioners of edutainment; - the merger of education and entertainment in products, at once enlightening and engaging, to be marketed to both home and school - as key groups determining emerging pedagogical prospects. Certainly, a great deal of commercial capital currently drives efforts to develop edutainment products, and there are powerful channels of distribution available to reach the public.

Significant limitations to these efforts, as efforts to restructure educational practice, are at work, however. The stuff in trade within edutainment is a set of products to be sold in the educational markets of home and school. Indubitably, schools and teachers and students, engaged in the work of education, constitute a market for the sale of various goods - food, books, clothes, pens and pencils, furniture, fuel oil, rings, electronics, and software. Education, as such, however, is not inherently a market, with success measured in market share and the relative efficiency in making and distributing product. Many a fool has emerged from a richly financed education, and many others have earned hard wisdom through a sparse regimen of study. As a human phenomenon, education is not a market for products, but a process of growth and transformation, one sustained over many years with success measured throughout the vicissitudes of personal and collective experience. Indeed, many companies may do well by doing good. But producers of edutainment have yet to show whether they have either an interest in the human process of education or the capacity to give intentional shape to it as a whole.

Can Disney or Apple or Time-Warner take responsibility for the systemic character of educational experience as it occupies the central activities of over 50 million persons nationally for periods of fifteen to twenty years each? Can they extend that responsibility to the billion or so children and youths who globally will acquire their education over the coming decades? Surely the activities of such companies, like those of mass communicators throughout the twentieth century, will have significant effects on the cultural context within which educational work takes place. But the likelihood that the producers of edutainment, as such and single-handedly, will be the prime movers in reshaping the processes of education is slim. They, like everyone else involved, are engaged in the social construction of an emergent system in which their agenda, as educators, shapes what they do and do not contribute to the construction.

Over coming decades, the primer movers in the course of educational innovation are more likely to be the knowledge industries and intellectual institutions, which are already the prime locus of education. Education is the work of educators, not movie producers, broadcasters, or theme-park operators. Educational institutions - schools, universities, museums, laboratories, libraries - are the major factors in the social construction of a new educational system. Worldwide they control a huge annual cash flow, derived from individual, governmental, philanthropic, and commercial sources, a cash flow more than sufficient to underwrite far flung innovation. Furthermore, they control and produce intellectual property of extraordinary breadth and depth. The holdings of Hollywood are but a pittance compared to those of the world's universities, laboratories, museums, and libraries and the changes wrought by the digital technologies are making precisely those holdings more accessible, more productive, and more meaningful in the lives of everyone. What might an agenda

for innovation, drawing on the interests and strengths of the knowledge industries and intellectual institutions, be like?

To draw the main components of this agenda together, let us survey distinctions that often characterize intellectual and educational work. When people talk about the fruits of intellectual work at its higher levels, they generally think of forms of knowledge spread across an intellectual spectrum that runs from universal scholarship - pure achievements of disinterested reflection - to the domains of professional practice - applied principles of organized performance. This distinction - for shorthand let us call it the distinction between the academic and the professional - is the fundamental polarity defining types of knowledge within institutions of education. In contemplating it, we should remember Pascal's great maxim - 'We do not display greatness by going to one extreme, but in touching both at once, and filling all the intervening space'. Great research universities include departments of sociology and schools of social work, departments of economics and schools of business, departments of political science and schools of public affairs, departments of biology and physiology and schools of medicine. Across every field, education included, people need both pure scholarship and professional learning. An agenda for use in reconstructing the educational system will touch both the academic and the professional and occupy all the intervening space.

It is not sufficient, however, in characterizing intellectual work to reflect only on the forms of knowledge. "Art is long, life short, judgment difficult, opportunity transient. To act is easy, to think is hard; to act according to our thought is burdensome." Intellectual work involves action, action of the burdensome sort in which thought guides the effort. If, from the perspective of intellectual institutions, a spectrum running from pure to applied, from academic to professional, characterizes knowledge, then a gradient, one that runs from theory to policy to practice, generally serves to describe intellectual and educational uses to which people put that knowledge. Sometimes theory guides work and activity; other times policy controls it; and often patterns of practice shape action. Properly speaking, these are ideal-types, like the poles of pure academic knowledge and applied professional learning. As ideal-types they are intellectual formulations applied to the stuff of experience, not empirical actualities substantially in it. Both sets of ideal types span the activities of knowledge and education, and we can use them to form a conceptual matrix that is useful in raising to the full level of awareness the powerful and comprehensive agenda embedded in the social construction shaping a new educational system in our time. (...)

Reconstructing the Educational System

Professional Policy: How can educators put into effect policies guiding educational practice that will advance the social construction of a new educational system?

Digital libraries, multimedia educational scenarios, and wide-area networking, three related and maturing technologies, have the promise to make advanced media serve as powerful engines of equity. Each of these technologies is of great educational significance. The libraries of the very richest schools currently represent minor academic resources compared to the aggregate resources of the digital library that becomes accessible at the desktop in any school, or home, with appropriate connections to the national information infrastructure. Educational experiences, activated by engaging multimedia scenarios and projects, can appeal to diverse learning styles and engross students of all backgrounds in cooperative, inquiry-based educational work. Wide-area networking can enable desktop video conferencing and group work in a responsive, content-rich context, and these new forms of educative communication can overcome the traditional isolation of the

classroom, bringing youthful minds actively into the laboratory, the archive, the field station, the theater, and the office.

These technologies, deployed without reserve, do not result simply in increased information access. They result in a substantial transformation in the conditions limiting full participation in cultural and intellectual work. An educational system engaging all in real participation - in constructing knowledge, developing skills, crafting designs, creating works, formulating theories, testing hypotheses, employing interpretation, exercising judgment - can enable all students to attain an unprecedented improvement in educational quality.

In pursuit of these possibilities, educators need to move from isolated pilot projects, which merely suggest the power of these technologies, to implementing a large, decisive demonstration of it. An unequivocal, undeniable example of what educators can accomplish with the new technologies is the policy key to the social construction of a new educational system. (...)

Educators need to bring the full resources of digital libraries, multimedia curriculum design, and wide-area networking to bear in all the classrooms of a well-defined area where all agree that education is working poorly. The social construction of a new system ultimately involves mobilization of great historical energy. Such effort does not arise by relying solely on incremental adjustments to established procedures in stable institutions. Hope, expectation, and a sense of efficacy need to mount. Activity needs to build to an uncertain turning point and then resolve because proponent and foe alike somewhere see results evident in the daily news that provide clear proof that a new system works along a spectrum of possibilities far more preferable than the old. Educators need to identify a large challenge with a well-defined, substantial population, a challenge that people hold insoluble, and they need to address that challenge fully, stinting neither effort nor expense, not in one school or a few, but in all the schools in the area of work, in a sustained, dramatic disclosure of new possibilities. That challenge lies with the education of impoverished children in American inner cities.

Digital Learning Communities

Professional Practice: How should educators organize the daily work of educational activity to enable people to fulfill the best possibilities inherent in their conditions?

One of the powerful predictors of how children will fare in school is the educational attainments of their parents. This predictor holds across cultures, languages, races, ethnicities. It poses a difficult challenge. In populations where the educational attainments of parents are low, how can their children achieve educational excellence? To answer this question, we need to ask another. Why is parental educational attainment such a powerful predictor? The reason is not obscure. Parents with significant educational attainments have better insight into the processes of formal learning and the strategies for success at it, and they are more likely to surround their children with intellectual resources that will prove supportive. In a myriad of subtle ways they pass their experience to their children. Parents who have not been successful in this formal schooling may pass on other kinds of knowledge that largely go unrecognized by the school culture. The challenge before us is to find a way to bring these ways of knowing together and to empower parental influence for all children in the processes of schooling.

Use of networked technologies, combined with a strong community of people learning together, will alter this cycle of failure that our educational structure, inadvertently perhaps, have helped to

arrange. Throughout the twentieth century, educational and social services have been highly segmented and specialized. Elementary schools serve children, aged 5 to 12, dividing them all up according to annual age cohorts. So too with the numerous other segments of the learning society - high school, adult education, job training, college, counseling, and so on. Schooling and other community services all occur in separate spaces because the information resources and specialists necessary for each function required a distinctive location and deployment. The information technologies of the twenty-first century change these conditions, and make the resources needed to sustain numerous different educational functions ubiquitous.

We hypothesize that this ubiquity of diverse educational resources will permit educators to break the cycle of reproduction in educational attainments. Parental empathy with the learning processes of their children will be greatest if the parents are fully engaged in learning themselves. So, too, with teachers and the surrounding community. We think that school should increasingly take on the characteristics of a learning community; comprising children, their parents, and professionals, all of whom are engaged in serious efforts to extend their education further and to participate in the common intellectual enterprise. To prototype such a learning community and to show its potential power in breaking the cycle by which patterns of educational attainment reproduce themselves from generation to generation, imagine a digital learning community in which all members - students, teachers, administrators, and parents - should continuously work in collaboration with each other to pose difficult questions and to work on answering them with the full intellectual apparatus of the culture. Through networked technologies and continuing involvement with other learning communities, universities, and public interest groups, each should have access to the resources and assistance to make headway on such goals.

Advanced information technologies make construction of integrated learning communities far more feasible. The ideal of parents and children, teachers and community members joining together in the shared nurturing of their human potentials is not new. It has been a difficult ideal to actualize, for the resources that will help the child differ from those that will help the parent, or the specialist, or community member. Networked technologies make it possible, through a single location, to engage a diversity of people with challenging learning scenarios, providing each with appropriate resources and useful intellectual tools.

Let us put aside the traditional image of the educational ladder, with children clambering, rung by rung, up the sequence of grades, some falling off as drop outs, some scaling the whole way to college graduation, walking thereafter the plateau of middle-class affluence. Let us image instead a learning community, with its youngest children entering at its very center and then moving outward as they grow through a series of concentric circles, with parents, teachers, and other adults ringed around them, with lines of interactive electronic communication linking all, from the center of these circles out, to the full range of cultural institutions and specialized resources of the society.

Conclusion

If the agenda, sketched in the pages above, approximates the historic task of social construction required in building a new educational system enabled by digital technologies, then we see that we are at most at the beginning of this effort that spans our extended present. The technological part is the easy part. The work of educational innovation stretches before us with demanding challenges.

Renew the progressive contract with posterity by using new tools to pursue historically challenging goals - achieving the fulfillment of basic human rights; securing physical well-being in a sustainable

global environment for all; eliminating prejudice, poverty, despair, and disease. Shift the central concern in cultural and education policy from limited access to open participation, displacing the long-standing politics of exclusion with a vibrant, many-sided politics of inclusion. Affirm the importance of independent inquiry and study as the engine of education, de-emphasizing the traditional dominance of instruction. Redesign the relation between K12 education and higher education with an integrated intellectual environment active at all levels, engaging all as creative participants in the cultural enterprise. Develop a demonstration that new educational possibilities can address the intractable problems of the old system on a scale sufficient to change public expectations. Create digital learning communities as the new milieu of practice where people meet face-to-face and via video conference, with people of mixed ages and interests engaged together in the effort of learning, supported by each other, by complete digital libraries, by open wide-area networks, and by powerful tools of analysis, synthesis, and simulation.

When such tasks are complete, then the work of social construction will have run its course. Much is to be done.

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ABSTRACT

The present document presents an intermediate evaluation of TRENDS progress, placing special emphasis on the process and the outcomes of school leaders' training. In order to reach some meaningful conclusions and suggestions for future action, the views of school leaders have been analysed in combination with the views of project partners and the project user group. At the end of the document, the actual results achieved in TRENDS project are summarised and some shortcomings in the development of the project are highlighted.

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1. INTRODUCTION

This deliverable is produced when, after an in-depth review and the lifting of a Red Flag, the TRENDS Project is going through intensive development of the demonstration phase (training of 2400 teachers in six E.U. member countries) whilst some minor elements of the verification phase (training of Schools Leaders) is not yet completed in some countries.

This happens because the red flag period (20 October '97 to 10 March '98) with its constraints to eligibility of expenditure has further delayed the implementation of School Leader's training, which had already suffered some project endogenous delay.

The focus of this evaluation report is the training of School Leaders (SLs), but the picture to which the report refers is the broader one of results achieved up to May 1998.

1.1 TRENDS PROJECT OBJECTIVES AND EXPECTED OUTCOMES

Reference has to be made to the initial objectives of the TRENDS project:

- **The development of an in-service, school-based teachers' training system, using multimedia telematics** and thus being a flexible, distance learning environment, to support the continuous professionalisation of the teachers, in Secondary Education by upgrading their professional skills and capabilities. This distance training system had to be validated in two stages. During the first, verification phase a number of 120 school teachers (the school leaders, 20 from each of the six national sites) were trained to support the delivery of the training services to the participating schools and help their colleagues during their training (demonstration/validation phase). In the second, demonstration phase a total number of 2,400 teachers (20 from each school) from 120 schools, in Greece, Italy, Spain, Portugal, France and the United Kingdom, are being trained on the «use of Information and Communication Technologies in the learning process», thus forming a significant number of school teachers in the public European Education, to support further changes in the educational environment. The demonstration of services is based on a distance training programme, with an approximate duration of 60 hours, provided by the Training Centres and supported by the school leaders with seminars organised in the schools.
- **The development of clearly defined, economically and socio-politically viable distance training services**, in the context of the above in-service, school-based model, using existing network technologies (ISDN, 64Kbps leased lines, TCP/IP) for the transmission of multimedia material.

- **The establishment and operation of a European Teachers' Training Network – i.e. a Network of Training Centres -,** supporting the efficient development and delivery of the distance training services (production of course material, customisation of existing information on the Net, access to databases and lists, tele-training courses, etc.). The Network consists of six Centres, one in each of the six national sites, in Greece, Italy, Spain, Portugal, France and United Kingdom, which act as service providers to the teachers in their schools (secondary education in the project pilot phase). In each of the Centres a WWW Server had to be set up and the appropriate administration and authoring (for developing and upgrading the services and the material) software to be installed.

  In each of the 120 schools a client user-friendly software environment had to be ensured, properly adapted to meet the different national needs (national languages, commercial sw available in schools, etc.). In such a way a significantly large number of European school teachers had to be given the capability to access valuable information available in the Netspace, with a friendly and time efficient way, to participate in teletraining courses as well as in interactive work sessions, disseminating experiences on issues of course structure, teaching methodologies and classroom organisation, establishing strong bonds between educators in several European countries, thus contributing to the development of teachers networks with relatively wide geographical scattering.

- **The preparation of exploitation plans** for extending the outcome of the project from the initial pilot phase to an open service throughout Europe, investigating its potential viability in other education user groups, and particularly in Primary Education as well as in vocational training schools, independently of the content of the training material (teachers training on students' assessment, teaching physics, etc.).

For the validation of the training services, the six Training Centres had to be connected through ISDN or 64 Kbps leased lines, consisting a European Training Network (backbone). At national level, 20 secondary schools had to be connected with the Training Centre. In each school one teacher has been commissioned the co-ordination of the training of the rest of the 20 teachers, during the demonstration phase. By the end of the project a number of approximately 2,400 teachers of Secondary Education will have been trained on the "use of ICT in the learning process", aiming at an on-going development of their skills and teaching effectiveness. The training includes technological and non-technological aspects.

The following were considered as **key operational steps of the project**:

- The development of the in-service, school-based training model (functional description of the distance training services and the network, basic modules of the model and methodology manual) (expected date of completion: **month 15 /** actual date of completion: **month 18**).
- The establishment of the Training Centres (expected date of completion: **month**

18 / actual date of completion: **month 21**).

- The connection of the 120 schools with the Training Centres Network, installation of the client + server software, and the commencement of the school-based training (expected date of completion: **month 24** / actual date of completion: **month 27**).

1.2 EVALUATION OF SCHOOL LEADERS' TRAINING: PROBLEMS AND DELAYS

In the TRENDS teachers training model a key role is foreseen for School Leaders (SLs), both as local supporters in pilot schools and as part of the project animation and evaluation team. Their training should have taken place by month 24 (December 1997), but, due to a combination of internal and red-flag connected delay factors, was not completed until March 98, and the international component of activities has still, to a large extent, to be implemented.

Almost all SLs met in the Crete seminar (September '97) and six transnational fora were launched during that seminar, but the uncertainty period that followed till March '98 has moved training centres' priorities towards not falling short of the expectations of their colleagues in schools (400 in each country) and of the national authorities, rather than on completion of each planned element of SLs' training.

So, this report has been written with some delay to accommodate the results of SL's feedback that had to be collected at the end of their training. Since some of this training was not over (whilst the initial technology, methodological and role-centred training had been completed in all countries), some of the SLs did not feel ready to answer the questionnaire and refused to do so, in spite of the existing deadline to submit this deliverable.

SCIENTER, as WP8 co-ordinating institution, apologises for this occurrence that is another fall-out of the critical phase which the TRENDS project had to face in the period October 97 – March 98.

1.3 THE EVALUATION APPROACH ADOPTED

Before introducing the structure of the report, a few references should be made to the evaluation approach adopted by TRENDS.

In relation to *evaluation theory and practices*, the TRENDS Evaluation framework reflects a "constructivist" approach which emphasises the importance of considering the process through which ICTs are developed and utilised as well as the assessment of outcomes and impacts. It emphasises the need to address the multiplicity of "world views" and objectives held by different stakeholders in the innovation. In addition, the

approach recognises that the "needs" of the different stakeholders may vary as the innovation develops, and suggests that evaluation thus needs to be responsive to the "life cycle" of the innovation development process.

As a result, the evaluation approach proposed places great emphasis on linkages between evaluation and activities that are traditionally associated with project management: it asserts that evaluation is very much about managing contingency and change as well as about "testing". Finally, the approach stresses the importance of locating ICT innovations within the wider social and cultural context in which they are developed and implemented.

Evaluation and systems design, development and testing do not, of course, take place in a vacuum. Effective technology assessments are usually those that are informed by an understanding of the *domain* in which the technology operates.

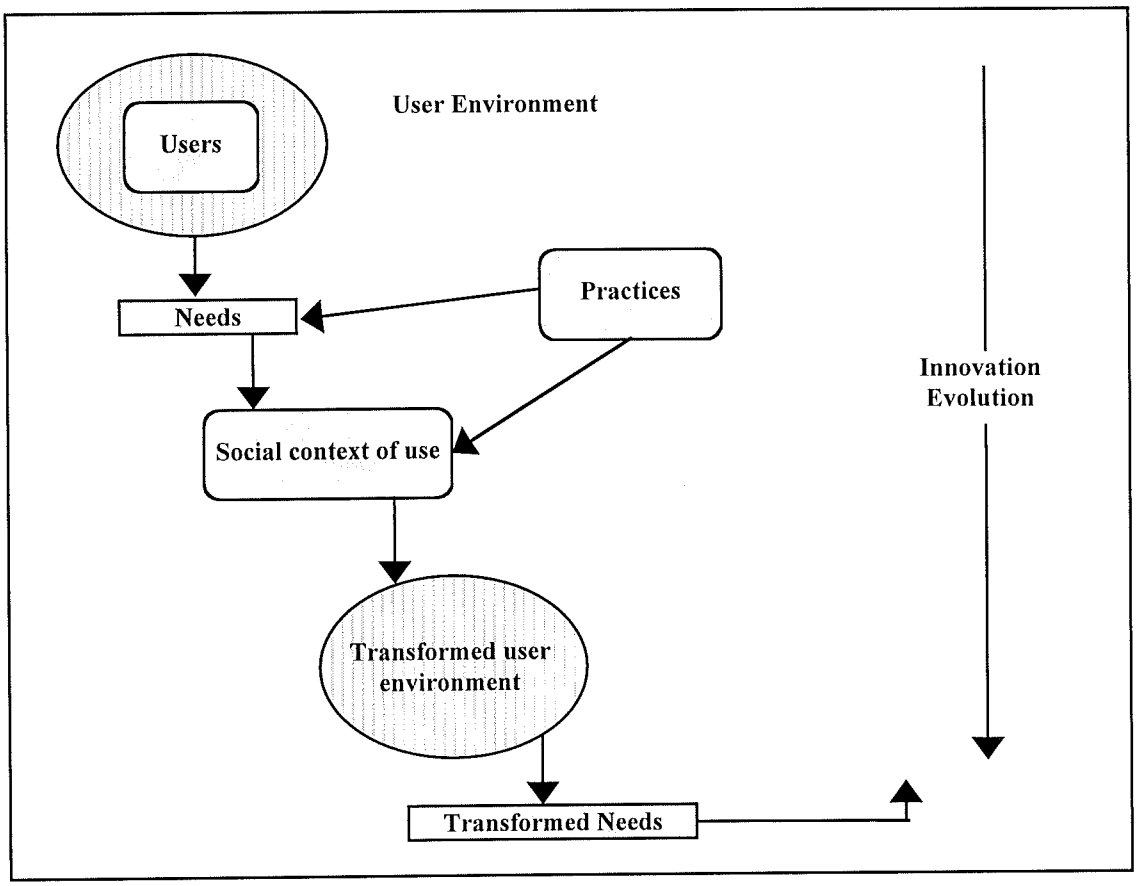
In the case of TRENDS, the domain of educational technologies represents a particularly complex world. Experience tells us that sometimes evaluations of educational technologies produce poor results primarily because their complexity is not adequately understood. Such innovations cannot simply be assessed purely as "technological artefacts" but need to be considered as complex "socio-technical practices".

Typically ICTs in the education and training domain represent a number of inter-related "innovation aspects", reflecting different combinations of i) technological innovation (using for example new software); ii) institutional innovation (for example new forms of association between the public and private sector); iii) pedagogic innovation (for example providing self-managed learning outside the conventional teaching environment) and iv) economic innovation (reflecting, for example, the substitution of labour by capital investment).

In addition, the development and implementation of ICTs is shaped by the "context" in which they operate, and the organisational environment in which they develop. The different "aspects of innovation", and the "context of development and use" need to be represented in the evaluation design, and the questions and criteria used in assessing the innovation.

Figure 1 represents schematically an evaluation model that attempts to incorporate these principles.

Figure 1: Socially contextualised evaluation model



The main features of this framework are:

- Users occupy multiple roles that can embrace both "end user" and "provider" functions, in the sense that SLs contribute to the design of activities for teachers.
- User needs are shaped by socio-cultural environment, and will vary in terms of different settings users occupy.
- Applications developed to address user needs can be seen as "practices" embodying socio-technical innovations rather than purely engineering artefacts
- User engagement with the "practices" developed to address defined needs takes place within a socially contextualised setting or "context of use". This context of use may be bounded within the users' habitual social life world; it may replace some elements of the "social space" usually inhabited by the user, and it may provide additional social context (for example in the form of "virtual social space") for users.

- The interaction between user and practices will in turn affect needs. Some needs may remain unsatisfied by the new practices; some needs may be diverted elsewhere (displacement); some new needs (for example for training to use new technology) may develop (additionality). These "transformed needs" will have to be evaluated as the innovation process develops dynamically.

Figure 2 shows how the generic evaluation framework set out above can be operationalised within the TRENDS project. As the Figure shows, evaluation is seen as an ongoing iterative process involving the integration of two parallel streams of evaluation activities, one at the broader project level and one stream located within the individual TRENDS pilot sites (national level).

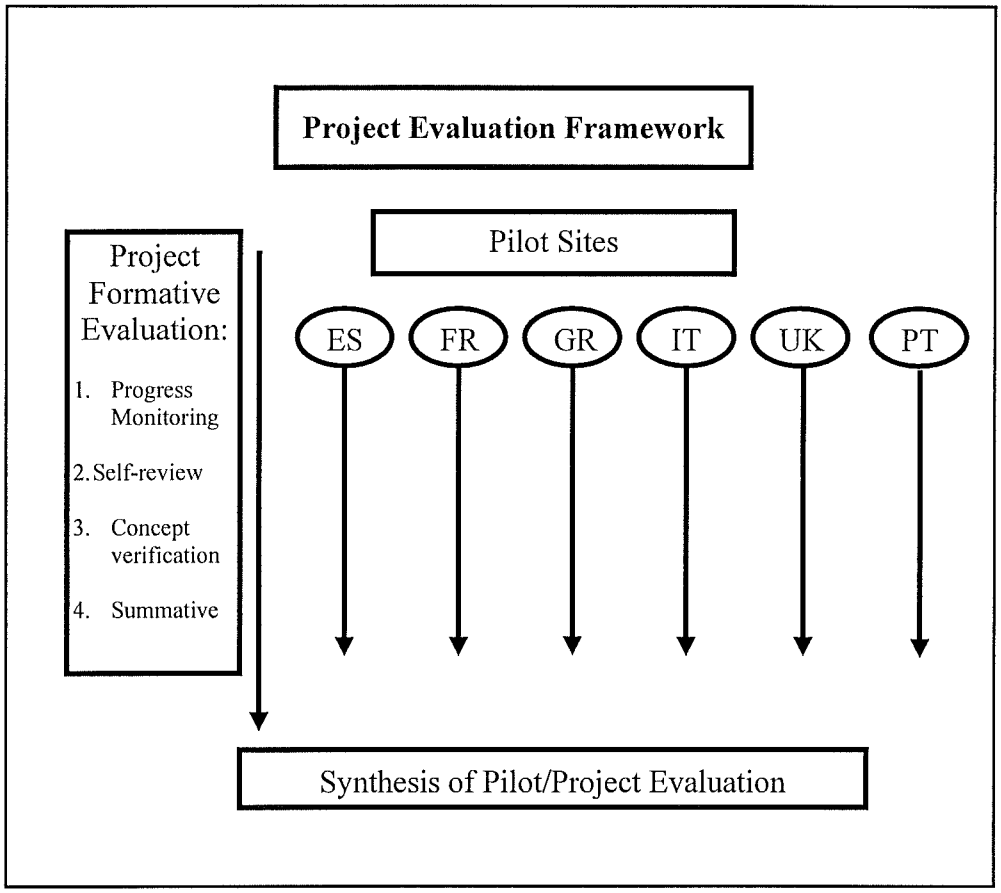
Both project level and site level evaluation is co-ordinated by the Project Evaluation Framework, which defines the parameters and operational procedures of the two streams, and sets common evaluation criteria and evaluation questions that need to be addressed.

At the level of the pilot site, these criteria and questions are "customised" to the environmental, institutional and socio-cultural characteristics of particular pilot sites. Within each pilot site the following sets of key evaluation activities are implemented:

- progress monitoring of piloting work programme and evaluation activities;
- formative evaluation of the systems development and validation process;
- summative evaluation of the pilot applications.

These activities at the level of the pilot sites provide the basis for an assessment of the "success" of each individual pilot. At the same time, the evaluation data captured for each pilot site provide inputs to ongoing progress monitoring and process evaluation for the TRENDS project as a whole and, aggregated together, make a major contribution to the summative assessment of the overall project.

Figure 2: TRENDS Evaluation Structure



The approach adopted for project evaluation and management has implications on the involvement of SLs: it should be noted, in fact, that SLs have been deeply involved in the design of their training, especially as far as the collaborative learning model is concerned, and had the opportunity to influence the organisation of the training for the 2400 teachers involved in the demonstration phase.

Ongoing feed-back and responsiveness to SLs' comments have characterised the development of this phase, at least since the Crete joint seminar (September 1997).

This report presents the population of SLs and their expectations in Chapter 2, their judgement on the training they received in Chapter 3, the views of project partners in Chapter 4, the views of the project User Group in Chapter 5 and some conclusive remarks in Chapter 6.

2. THE POPULATION OF SCHOOL LEADERS

A pre-test questionnaire has been handed out to the participants of the seminar carried out in Crete on 15-17 September. The School Leaders are twenty for each country (Spain, France, United Kingdom, Italy, Portugal, Greece), but not all of them took part in the seminar (108 out of 120). The questionnaire is divided in five sections.

The first one concerned the personal data of respondent, namely: age, gender, school level and size of school in terms of number of students.

The second one gave information about the experience in innovative in-service teacher's training (innovation concerns not only the use of Information and Communication Technologies - ICT, but also methodology, contents, etc.) and European initiatives/projects. Moreover, it included a description of the difficulties that they perceive as primary obstacles to the implementation of an innovative in-service training initiatives.

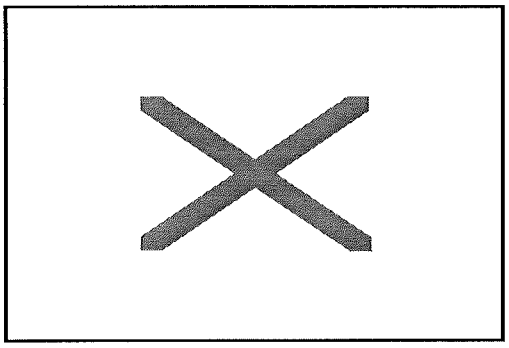
The third section asked about the teachers personal experience of using information technology systems and applications.

The fourth section assessed the teacher's self-reported level of competence in his/her domain subject and in relation to using ICT to teach.

The last section explored the benefits that School Leaders expected as a result of participating in TRENDS.

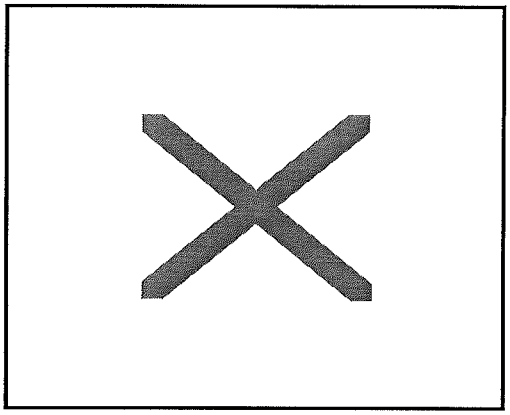
2.1 PERSONAL DATA OF RESPONDENT

Most of the School Leaders have an age between 26 and over 45. Greece and Portugal have a higher number of teachers with an age between 26 and 35 in comparison to the other countries, (respectively 12 out of 18 and 11 out of 22). Within the class 35-45 is



concentrated the highest percentage (40%) and the distribution of the frequency is almost the same in all countries. The percentage of "over 45" is still considerable (28%), more concentrated in Spain, France and Italy.

The majority of School Leaders are men (67%). Only in France women are more numerous than men (5 out of 8).

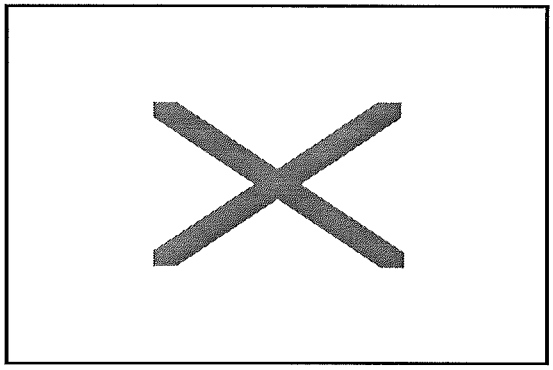


The great majority of School Leaders teach in upper-secondary school: this represents the totality in Italy, France and Spain, while in Greece, Portugal and United Kingdom about half of the SLs have been selected in order to represent lower-secondary schools. Most of the School Leaders, especially in Spain (17 out of 20), are teaching at schools with more than 1000 students. In Italy the majority of them are teaching at schools with a pupil population between 300 and 500.

2.2 EXPERIENCE IN INNOVATIVE IN-SERVICE TEACHERS' TRAINING

2.2.1 Participation in previous innovative in-service teacher's training initiatives

More than half of School Leaders (66 out of 108) had never participated in training initiatives before. The lowest access to previous courses has been registered in Greece (16 out of 18) and UK (16 out of 20).

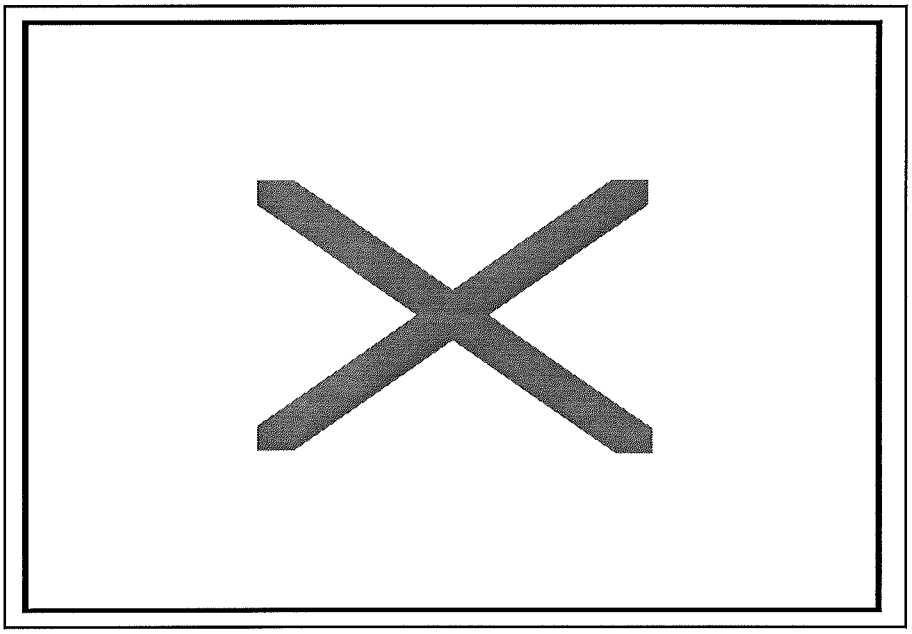


2.2.2 Degree of satisfaction with that experience

Most of the designers, tutors and trainees have been satisfied with previous training experience. None have done a negative reply, and only 9 of them have said to be neither dissatisfied nor satisfied.

2.2.3 Participation in European initiatives/projects

26 out of 108 School Leaders of different countries have participated in this kind of initiatives. The proportion is higher in the groups of Italy and Portugal.

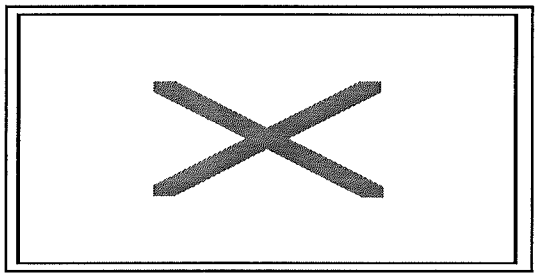


2.2.4 Degree of interest in collaboration with other teachers

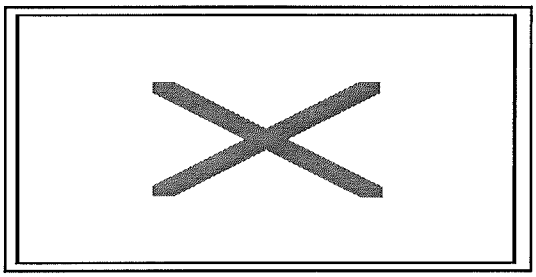
About the aspects of *exchange of information* and *teaching experiences* 19 out of 23 School Leaders regard themselves as interested or very interested.

Concerning the other aspects, namely *sharing of teaching resources*, *international collaboration* and *international collaboration on innovative issues* about a quarter of them have answered to be not interested at all or not very interested and another quarter to be neither interested nor uninterested.

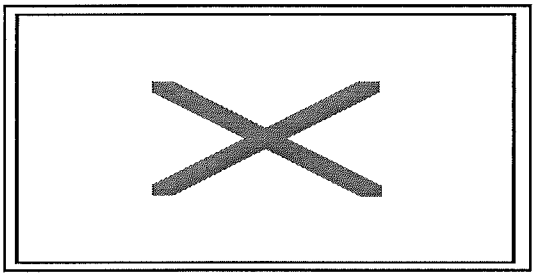
- *Exchange of information*



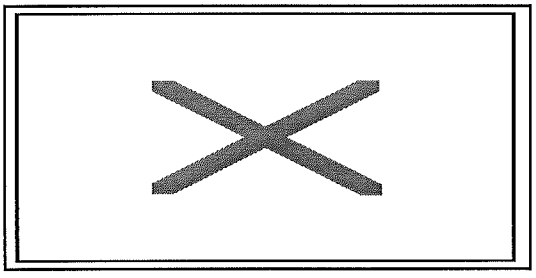
- Exchange of teaching experiences



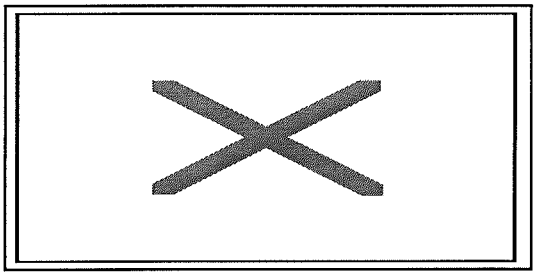
- *Sharing of teaching resources*



- *International collaboration on methodological issues*



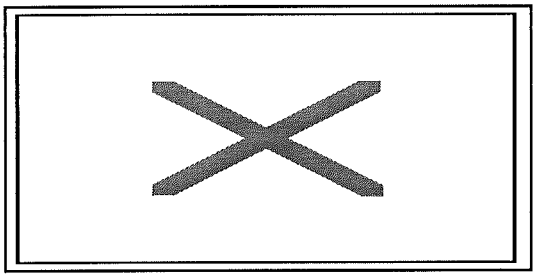
- *International collaboration on innovative issues*



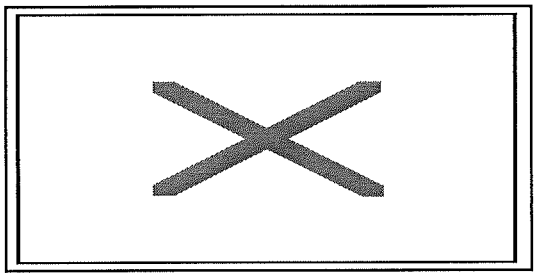
2.3 DEGREE OF IMPORTANCE ATTRIBUTED TO THE FOLLOWING ASPECTS IN THE FRAMEWORK OF A EUROPEAN INNOVATIVE IN-SERVICE TRAINING INITIATIVE

All the aspects are considered very/extremely important, but that one about exchange of teaching experiences is considered the most important at all (93 out of 108).

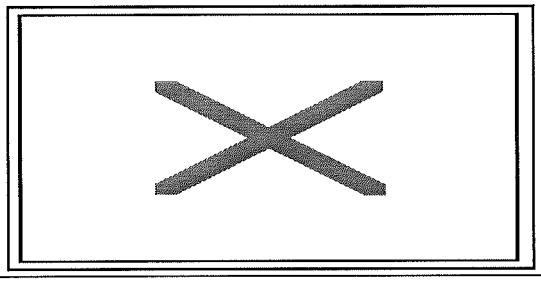
- *Exchange of information*



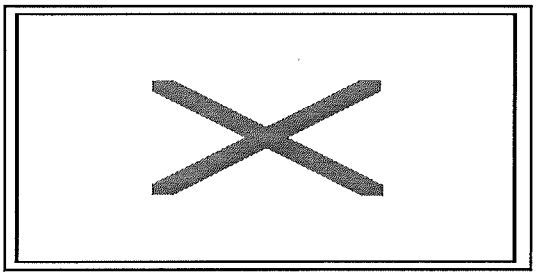
- *Exchange of teaching experiences*



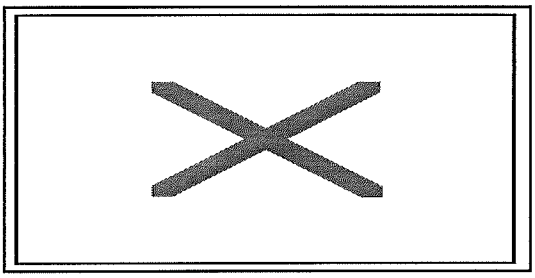
- *Sharing of teaching resources*



- *International collaboration on methodological issues*



- *International collaboration on innovative issues*



2.3.1 Difficulties perceived as primary obstacles to the implementation of an innovative in-service training initiative

Each country perceive the *balance between ordinary work-load and training activities* as the primary obstacle (73), followed by that one about *organisation/co-ordination of the related activities* (52). However, the other difficulties as *uptake of innovation and subsequent change*, *motivation support* and *real adoption of ICT* are also perceived as possible obstacles.

2.4 EXPERIENCES IN USING ICT

2.4.1 Use of various information technology systems and applications

Most of School Leaders already used personal computer (77 out of 108) and word-processing (61 out of 108). Even other information technology applications (spreadsheets, databases, interactive multimedia, Internet, E-mail, computer-conferencing, video-conferencing) were used, but not as much as PC and word processing. Computer conferencing and video conferencing were the least used technologies at all.

2.4.2 Personal access to a computer

61 out of the 106 School Leaders who answered have personal access to a computer both at home and school.

2.4.3 Use of the information technology systems and applications on own computer

Word-processing is the information technology system more used by the School Leaders on their computer (105). Internet, E-mail and databases are used more or less to the same extent. In general, School Leaders have shown not to have a lot of familiarity with video-computer conferencing.

2.5 SELF-ASSESSMENT OF SL'S COMPETENCIES

2.5.1 Degree of satisfaction with own performance on the aspects of teaching practice

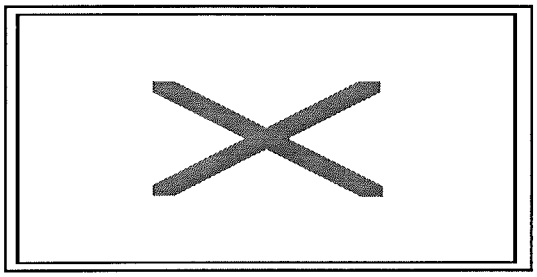
Most of participants are satisfied with their teaching practice and of each with the aspects proposed, especially for what concern the way to motivate the students to learn (60), the awareness of developments in their own subject area (58) and the way to manage the classroom time (60), in which more than half of them have expressed a positive judgement.

2.6 EXPECTED BENEFITS FOR TRENDS

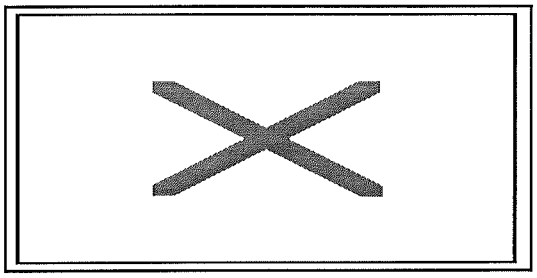
2.6.1 Benefits participants might be interested in getting as a result of participating in TRENDS

Each of the items are considered more or less important. The only benefit participants seem not to be interested in is that about improving the control over discipline in the classroom. Indeed, 64 out of 108 School Leaders consider it important or not at all important.

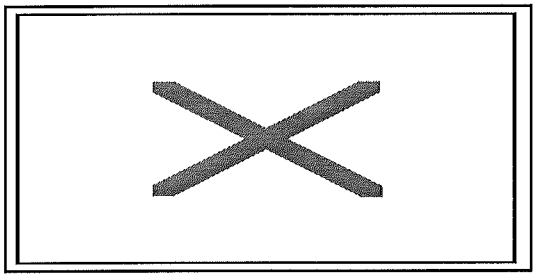
- *Improving knowledge of IT*



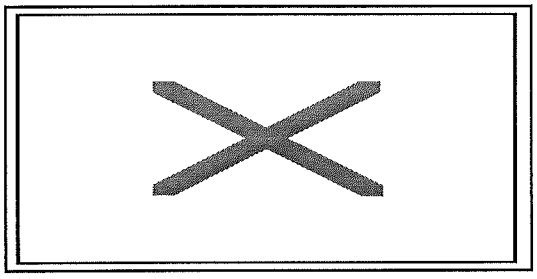
- *Improving teaching skills*



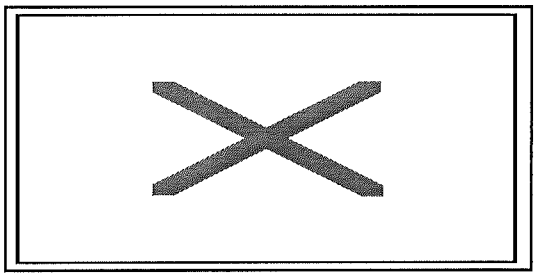
- *Improving knowledge about the subject area*



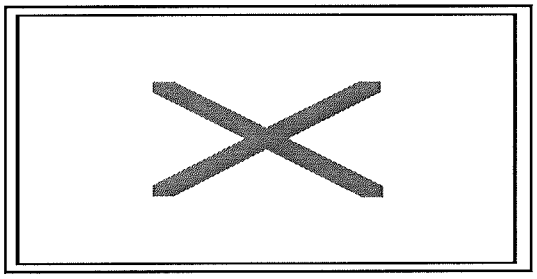
- *Improving awareness of developments in education in general*



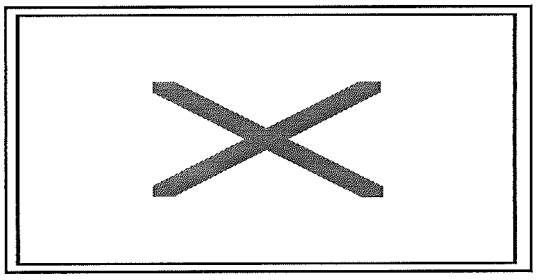
- *Improving awareness of developments in the subject area*



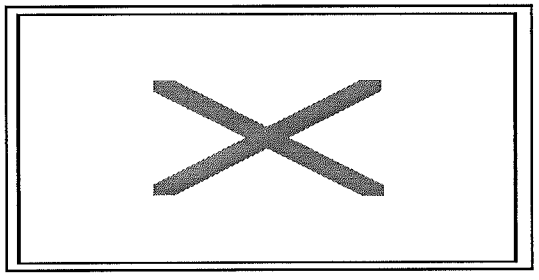
- *Improving the way to manage the classroom time*



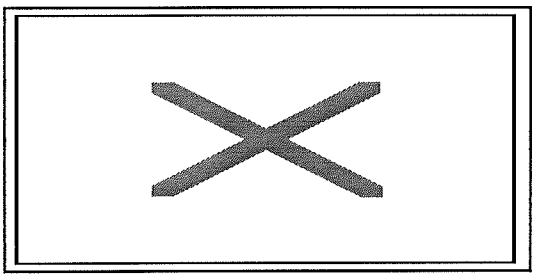
- *Improving the way to manage didactics in the classroom*



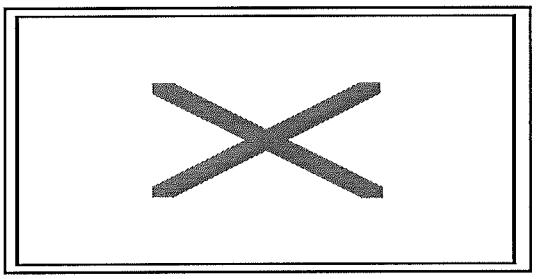
- *Improving control over discipline in the classroom*



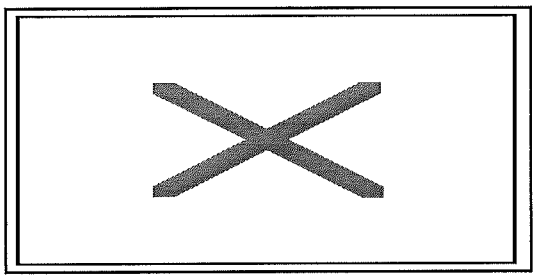
- *Improving access to other educators elsewhere*



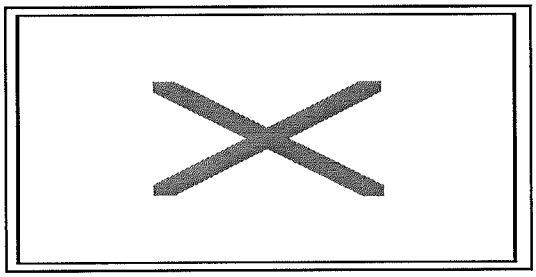
- *Improving access to material for use in teaching*



- *Enhancing pupil's knowledge*



- *Improving career prospects*



2.7 CONCLUSIVE REMARKS

At the end of this brief review of the pre-test SL's survey, we can try to make some considerations with regard to the answers of the participants.

As we have seen in the question 2.1 (Section 2), more than half of School Leaders (66 out of 108) have never participated in previous initiatives of in-service teacher's training, but what is interesting is that 51 of them have an age between 26 and 45. On the other hand, the highest participation has been registered in the age class over 45 (15 out of 30). This is probably due to the mere fact that School Leaders over 45 have a longer career and had more chance to attend previous initiatives.

What is still more interesting is that among the few School Leaders that took part in this kind of initiatives and European projects, most of them are teaching languages. The reason is probably because of in general, one of the criteria necessary to take part in these projects (like in TRENDS) consists in having a good command of the English language.

Most of the SLs had some familiarity with computers and Internet, but not much with multimedia and communication technology. Another criteria required to take part in TRENDS consisted in having a fair knowledge of the communication technologies and the use of the conferences was content of the proposed pilot course rather than a requirement.

Computer conferencing and video conferencing are the least used technologies and who knows to use computer conferencing are especially School Leaders that are teaching literature, history and geography. School Leaders that are teaching languages have demonstrated to have little knowledge of the communication technologies, but at the same time they deemed it is important to improve this aspect. In fact one of the benefit they expected to gain as a result of participating in TRENDS is to improve their knowledge of ICT.

As above mentioned the three criteria required to participate in TRENDS project consisted in: a good knowledge of English language, a fairly good knowledge of information technologies and an acknowledged status inside the participating school. The data collected reflect the criteria required and define a group of teachers that has a good approach to collaboration, limited experience of international projects, high motivation towards increasing their knowledge of ICT.

3. THE VIEWS OF SCHOOL LEADERS

This chapter reports the views of the School Leaders of the different European countries based on the information collected through the post-test questionnaire on-line.

As explained in the introduction, this report is based on 42 questionnaires, because many school leaders did not accept to fill a post-test questionnaire since some trans-national parts of training were not completed yet, in spite of the start of the demonstration phase. Nine questionnaires come from Spain, three from France, eleven from Greece, twelve from Italy, seven from Portugal. With regard to United Kingdom the School Leaders were interviewed by BECTA (then NCET) some time before the launch of the questionnaire, so these have not been asked again. Their positions, as reported by the British Country Leader and Training Centre, are reported wherever available in the corresponding parts of this chapter.

The fact that the questionnaire has been completed when the experience was still going on (the core learning programme of SLs is finished, but the activities relative to the experimentation of the three scenarios is still going on in parallel with the training of 2.400 teachers) is likely to have influenced some answers, especially on the "virtual classroom" scenario, that has not yet been implemented in all countries due to technical problems.

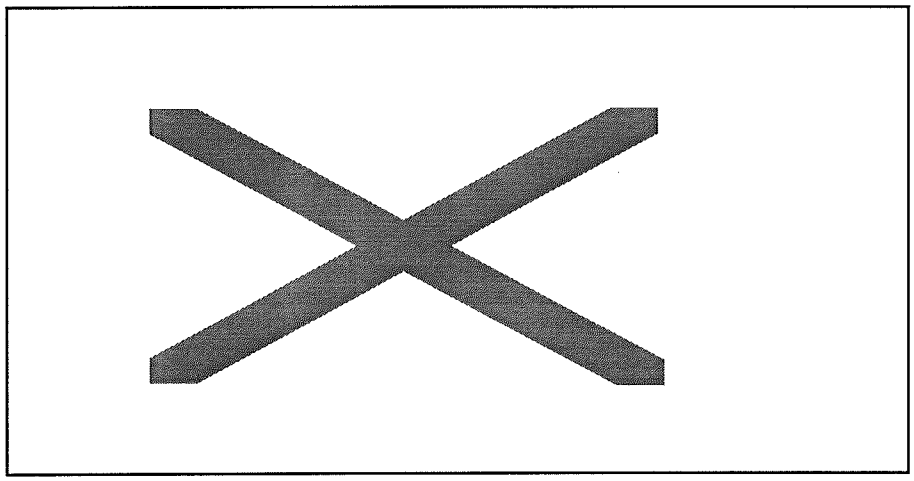
3.1 PROGRAMME PARTICIPATION HISTORY

3.1.1 Period of using TRENDS services on-line in terms of weeks

The period through which SLs have used some of the TRENDS services is generally long, but strongly differentiated from country to country. As we can note from the distribution of the answers, Portugal have shown to have the highest duration in terms of weeks: min. 22, max 100 for an average time of 70 weeks. It is followed by France (min. 25, max 64, average 40,3), Italy (min. 10, max. 36, average 27,5), Spain (min. 1, max 32, average 18,1), and Greece (min. 5, max 28, average 14,8).

This variation reflects the fact that Portugal and France had to speed up the implementation phase of the project due to their national context and were able to implement several TRENDS services well in advance of Spain, Italy and Greece, which kept the pace with the general development timing of the project. The UK situation is an

intermediate one.



3.1.2 Withdrawal from the programme

Concerning this phenomenon we can see that the number of withdrawals is limited to Spain, France and Greece, respectively one School Leader for each country.
The Spanish and French School Leaders have stopped using the TRENDS services at the first week, while the Greek one never started.

The Spanish participant has had difficulty in using the equipment and he/she has found the course very different from what he/she expected, while the French participant withdrew because he/she didn't have enough time. Both of them have found the materials offered not interesting and the services not relevant to their professional needs.

3.2 EXPERIENCE OF USING THE SERVICES

3.2.1 Level of utilisation of the services in relation to the three types of location

a) Communication with trainers/tutors

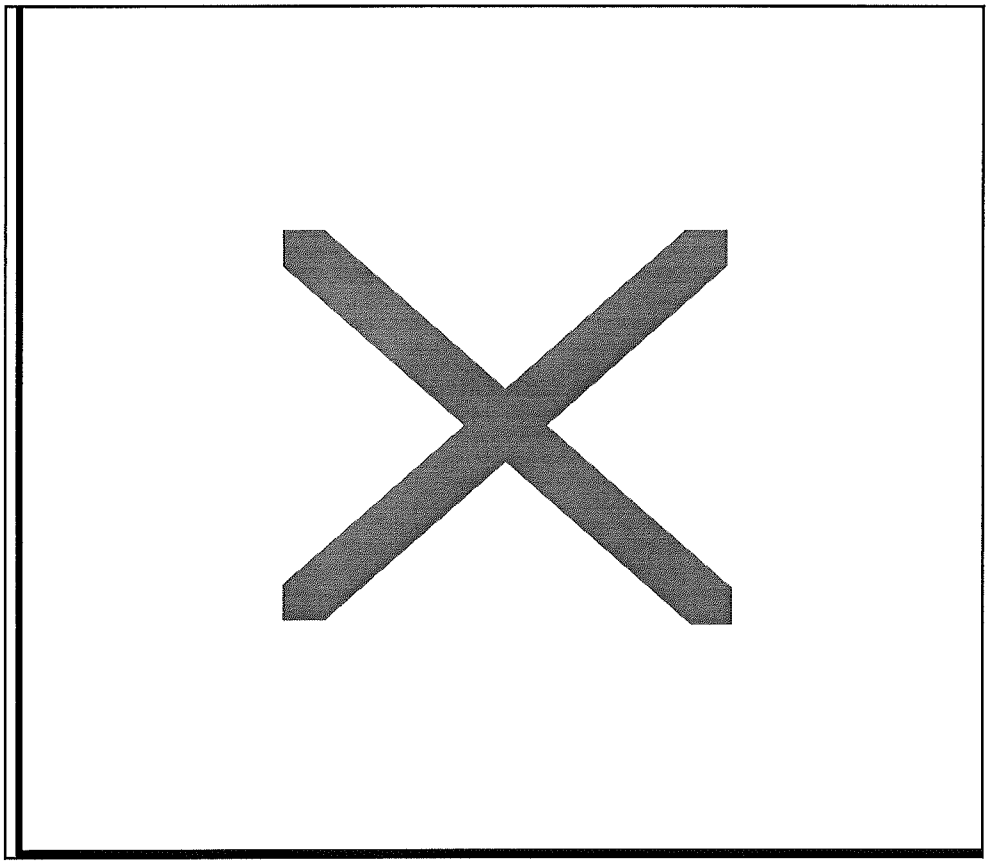
The School Leaders communicate with trainers/tutors especially at school and at home. Portugal in particular has the highest frequency in each of the three types of location proposed (school average 27,9, home average 22,1, Learning centre average 4,6).

b) Supported self-learning

The average time dedicated by School Leaders to the supported self-learning is once more higher in Portugal than in the other countries, but this time the frequency in comparison to the previous service is higher at home than at school or in the Learning centre. Only in France and Greece we find a more frequent use use of this kind of service at school than at home and in the Learning centre.

c) Virtual classroom

In some of the countries the virtual classroom scenario has not been utilised yet, but it will be used in the next weeks. Portugal is still an exception in comparison to the other countries.



d) Collaborative learning

Home is the SLs' preferred location to take part in collaborative learning experiences.

e) Access Internet educational information

Concerning the use of Internet we can see that the School Leaders usually connect from school, but also from home to a significant extent. About the average time, Portugal is on the top, followed by Spain, Italy and Greece; French SLs seems to

have shorted connections. A consistent message from the English SLs was that working at home, with either the school portable or their own equipment meant that they could work with greater care and concentration on their assignments.

As a whole, we can say that the initial hypothesis of TRENDS services being based on schools' needs to be integrated with systematic access from home, that provided to be rather frequently emerging as a clear preference from the SLs. It should be noticed, however, that this group had already more familiarity with IT than the "average" teacher that is taking part in the demonstration phase.

3.3 LEVEL OF SATISFACTION OF THE SEVERAL ASPECTS PER TYPE OF SERVICE

a) Communication with trainers/tutors

In general, none have replied in a completely negative way. Concerning the different dimensions of the support system Portuguese School Leaders seem to be the most satisfied.

The majority of the School Leaders of the other countries have replied neither satisfied, nor dissatisfied.

Spain and Greece have answered to be satisfied especially for the accessibility of service and the willingness shown by tutors. Moreover Greece seems to be satisfied about the appropriateness and comprehensiveness of information/material provided.

With regard to France and Italy the data seem to be distributed in an homogeneous way among the levels of satisfaction.

b) Access Internet education information

The judgement is in general positive, except for the accessibility of service and technical performance that in some cases (Spain, Greece and Italy) have been difficult.

Greek, Spanish and Italian School Leaders have expressed some negative judgements regarding the use of information for learning purposes and the availability of information about teaching subjects and of updated information. As in the previous case the countries have generally a neutral behaviour, while Portugal have, as usual, expressed an extremely positive judgement.

With regard to United Kingdom School Leaders, commented that conferencing provided support and had deepened their learning through professional dialogue. On-line communication activity in successful conferences was vigorous and focused. Such dialogue encouraged teachers to reflect and, when challenged,

defend their opinions. As their confidence grew they were able to define their teaching strategies and materials and expose them to peer scrutiny. The conferences also revealed considerable co-tutoring where mutual support and guidance were offered by the members.

c) Virtual classroom

Most of respondents express neutral or even negative views on the utilisation of this scenario because they had limited or no opportunities to experiment it. The exceptions came dominantly from Portugal.

d) Collaborative learning

Concerning the technical (accessibility of service), organisational (organisation, animation) and learning aspects (interactivity and exchange of ideas on one hand, and learning together or from peers and development of a common project on the other) the participants have generally answered in the same way. Portuguese School Leaders as usual are satisfied, French School Leaders occupy a neutral position while the School Leaders of the other countries distribute themselves equally along the range of evaluation. It is interesting in stressing that Greek and Italian School Leaders have appreciated the learning aspect in particular the possibility of exchanging ideas (Greece 5 out of 11, Italy 6 out of 12) and of learning together (Greece 5 out of 11, Italy 7 out of 12) or from peers (Italy 6 out of 12).

e) Supported self-learning

With regard to the technical aspect (accessibility of service and user-friendliness) Greece, Italy and Portugal have expressed a positive judgement, but the situation is different for what concern the aspect of the quality and efficiency of learning tools (interactivity, sequence of contents, clarity of information/contents provided); all countries have answered in a rather negative way, but most of the School Leaders have chosen a neutral position except the Portuguese that once more have been very satisfied and Greeks who have been particularly satisfied for the quality of information/contents provided (7 out of 11). This should also be explained by the fact that only after December '97 the project took the determination of producing its own learning materials on the core content of the course (Pedagogical use of ICT in school), but this was done for the demonstration (2400 teachers) rather than the verification phase (120 SLs).

Concerning the aspect of the appropriateness and comprehensiveness of information/contents provided the distribution of the answers is similar to the previous question.

3.3.1 Degree of satisfaction with their own performance on the several aspects of teaching practice

In general all the countries have answered to be satisfied with regard to the several aspects of teaching practice, in particular on the knowledge of IT (35 out of 42), the way to motivate the students to learn (32 out of 42), the knowledge about the subject area (34 out of 42), the awareness of developments in education in general and in the subject area (30 out of 42), the control over discipline in the classroom (30 out of 42). Even concerning the remaining aspects (the way to manage the classroom time, the access to the other educators elsewhere and the access to material for use in teaching) it has been expressed a positive judgement, but not so much as to the previous aspects.

3.4 CONTRIBUTION OF THE PARTICIPATION IN THE TRENDS PROJECT

The Portuguese and Italian School Leaders, in comparison to Spanish, Greek and French School Leaders, think that their participation in the project has particularly improved their knowledge about IT (Portugal 6 out of 7, Italy 7 out of 12).

In general the School Leaders are not aware of improvement of their teaching skills, except for the Portuguese. The situation is similar in what concerns the improvement of knowledge in the subject area.

With regard to the improvement of the way to manage the classroom time and didactics and the control over discipline in the classroom, the perception is the same: the School Leaders, except for the Portuguese, think that the project activities have made a slight or moderate contribution.

The School Leaders have expressed a more positive judgement regarding the awareness of the developments in education in general and the subject area: it should be noted that this answer is not coherent with the negative judgement that the School Leaders have expressed in relation to the improvement of knowledge of the subject area.

Concerning the access to other educators elsewhere and the teaching material, School Leaders think that the project has actually made a moderate or substantial contribution.

With regard to the enhancement of pupil's knowledge the answers are more distributed: 28 out of 42 think that the project has made a moderate or big contribution. Greek and Portuguese School Leaders have expressed a more positive judgement, while Italian, Spanish and French SLs have appeared more perplexed and have replied in a more negative way.

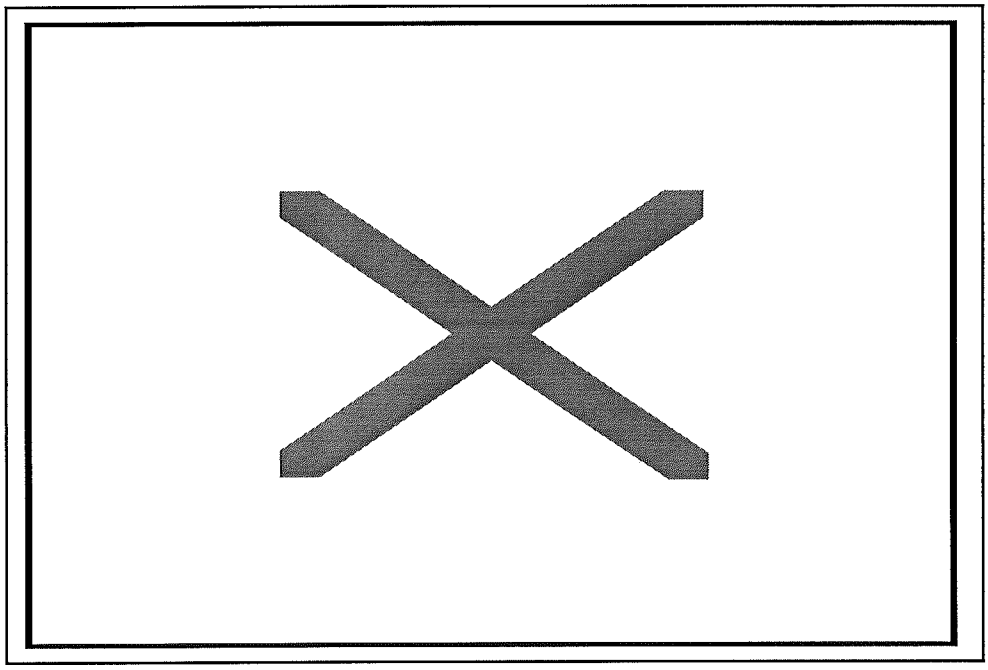
Considering the improvement of career prospects, the School Leaders are not aware at all of their experiences developed neither regarding the use of teaching skills nor concerning the system competencies.

English head teachers highlighted the following as successful outcomes of the project: increased ICT competence and confidence of the participating teachers; interest amongst the staff as a whole in ICT training; demands from staff to extend the training to others beyond the TRENDS teachers; greater use of ICT in the curriculum, particularly the use of Internet resources in teaching and learning; the start of a debate about how to develop the ICT skills of pupils. The benefits beyond ICT matters include an increase in the management skills of the School Leader and more effective staff development. Head teachers highlighted the commitment shown by teachers working together and taking control of their own professional development.

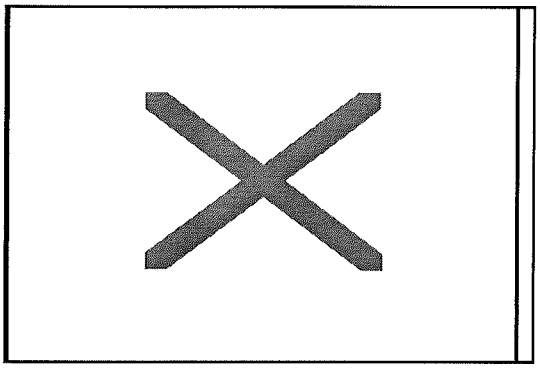
3.4.1 Degree of overall satisfaction with the three scenarios

In general the degree of satisfaction with each of the three scenarios is quite positive in relation to the supported self-learning (15 out of 38 neither satisfied nor dissatisfied, 23 out of 38 satisfied or very satisfied), and to collaborative learning (12 out of 38 neither satisfied nor dissatisfied, 19 out of 38 satisfied or very satisfied).

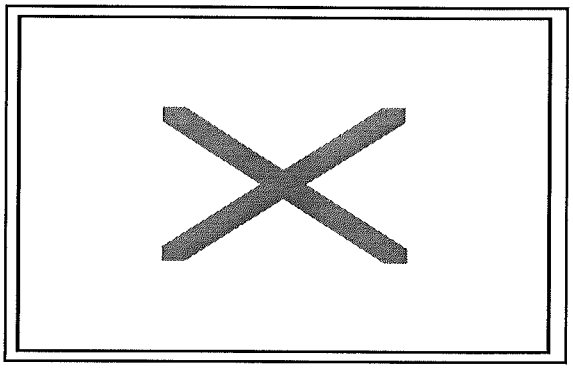
The degree of satisfaction of the virtual classroom is lower (14 out of 36 neither satisfied nor dissatisfied, 10 out of 36 satisfied or very satisfied).



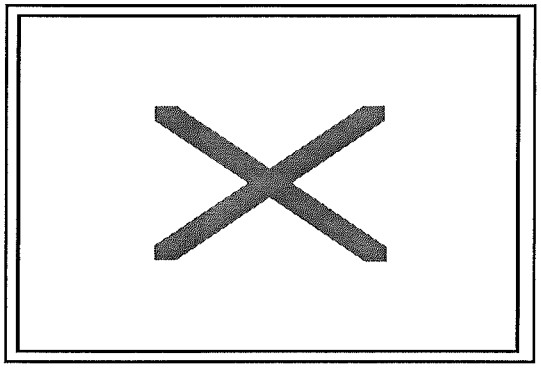
Degree of satisfaction in Spain



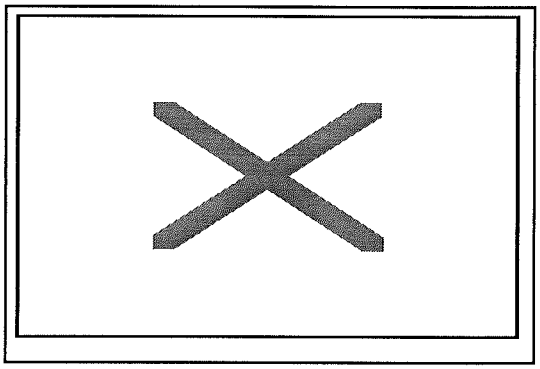
Degree of satisfaction in Italy



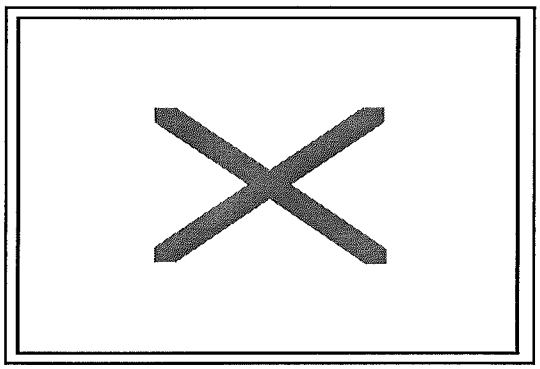
Degree of satisfaction in France



Degree of satisfaction in Portugal



Degree of satisfaction in Greece

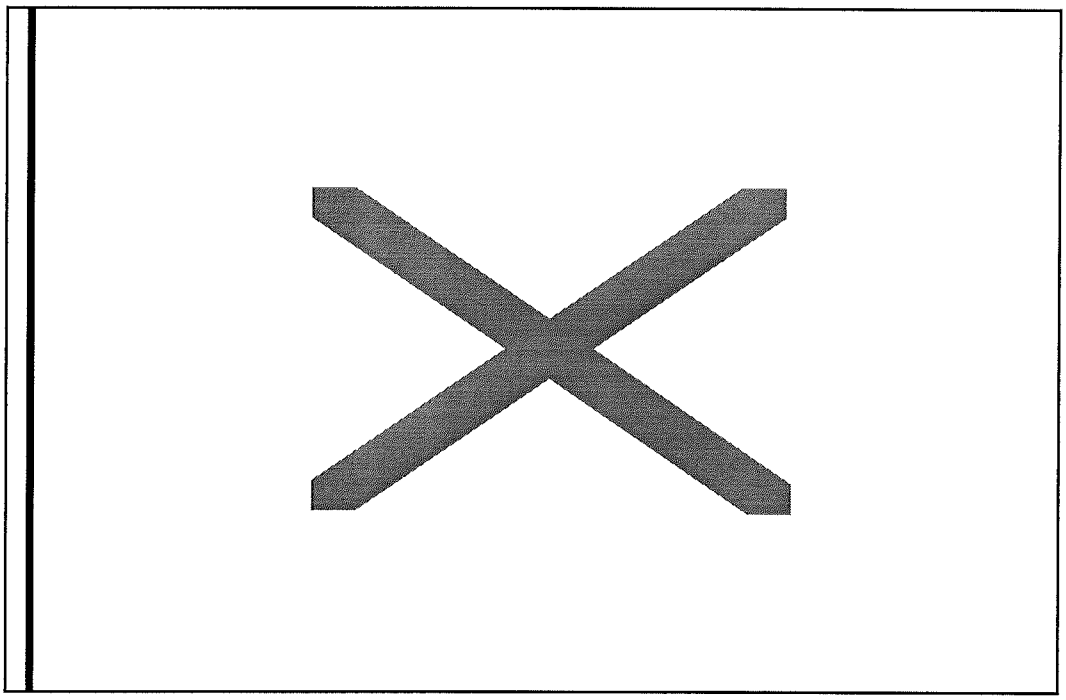


3.5 DEGREE OF CONFIDENCE IN USING THE TRENDS SERVICES

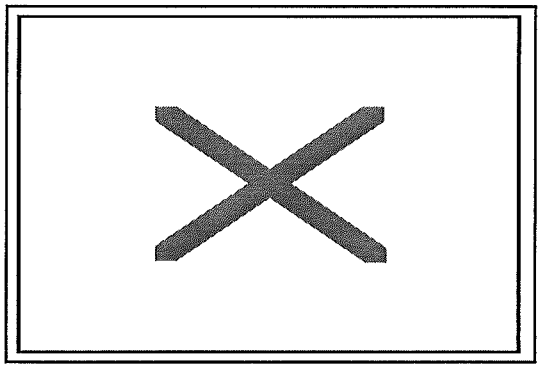
The degree of confidence in using the TRENDS services within the virtual classroom scenario is not particularly positive. The Portuguese School Leaders have expressed the most positive judgement, while French , Italian, Greek and Spanish SLs seem to have a

lower degree of confidence.

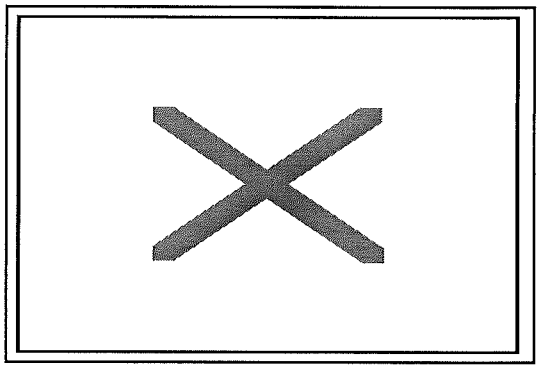
The situation is completely different regarding the supported self-learning and the collaborative learning. Concerning the supported self-learning scenario 24 out of 38 School Leaders seem to have a good or very good degree of confidence in using it and 10 of them a moderate degree. We can find the same situation for the collaborative learning scenario: 20 out of 38 have answered "good" or "very good" and 10 out of 38 "moderate".



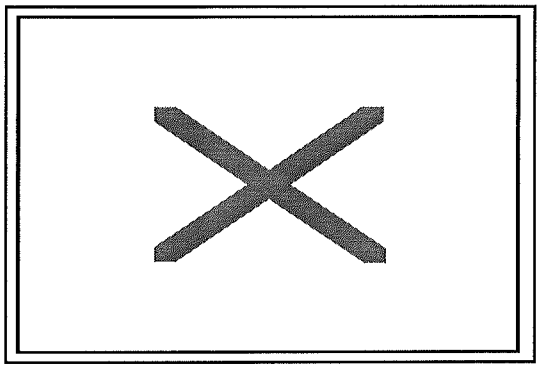
Degree of confidence in Spain



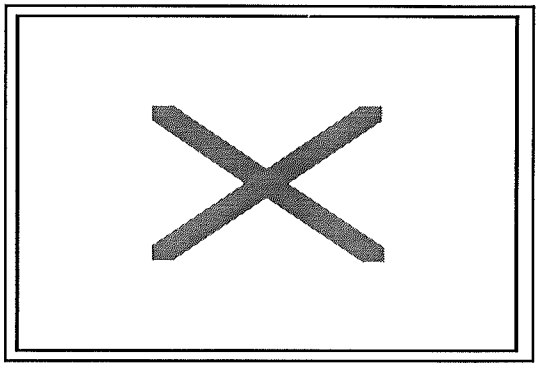
Degree of confidence in France



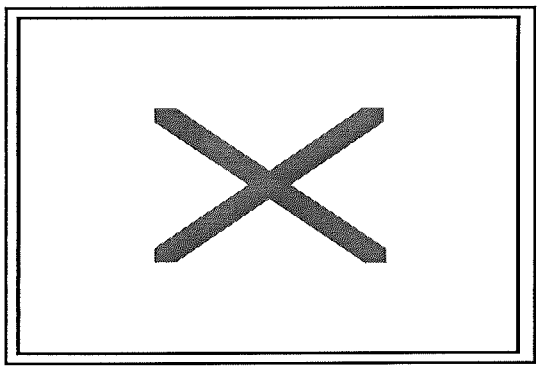
Degree of confidence in Greece



Degree of confidence in Portugal



Degree of confidence in Italy



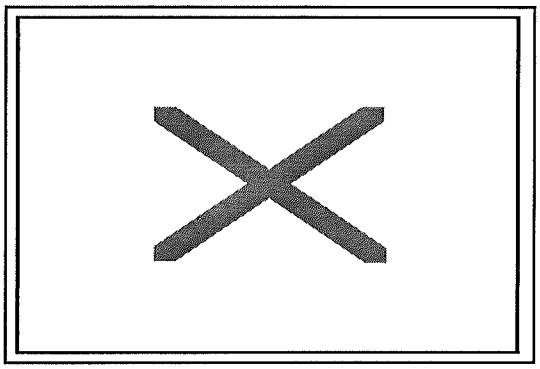
3.5.1 The usefulness of the three scenarios for achieving the related learning objectives

The satisfaction and the confidence in using the TRENDS services have been confirmed in the usefulness of the three learning scenarios that the School Leaders have pointed out for achieving the related learning objectives.

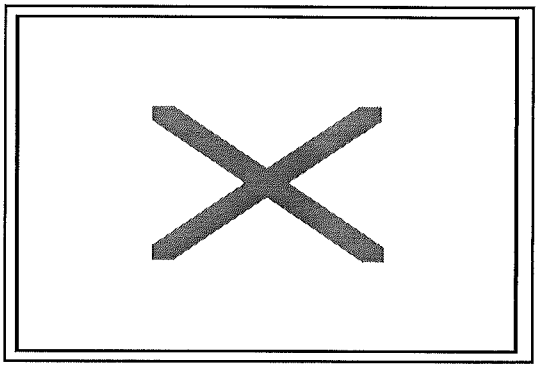
Fifteen out of 35 think that virtual classroom is "not useful at all" or "slightly useful" (but most of them have not directly tried it), 9 out of 35 "moderately useful" and 12 out of 35 "quite" or "very useful".

Concerning the supported self-learning 9 out of 36 think it is "moderately useful", while 24 out of 36 "quite" and "very useful". With regard to the collaborative learning 12 out of 36 think it is "moderately useful", while 16 out of 36 "quite" or "very useful".

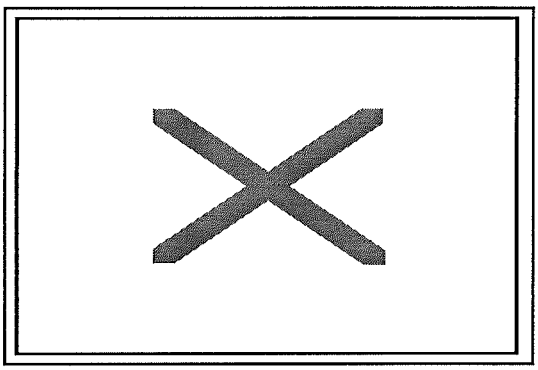
Degree of usefulness in Spain



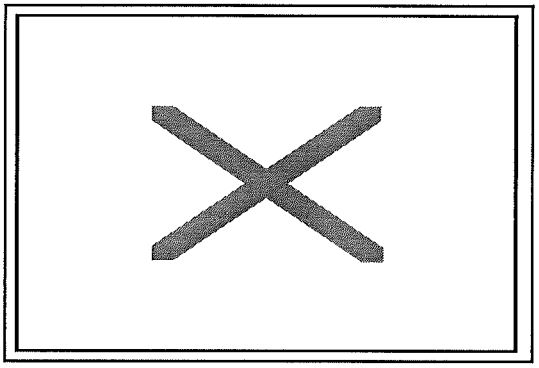
Degree of usefulness in Italy



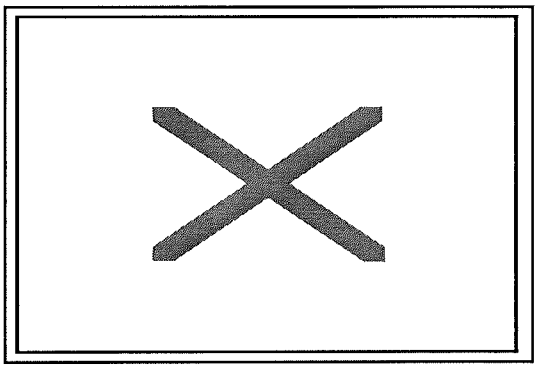
Degree of usefulness of France

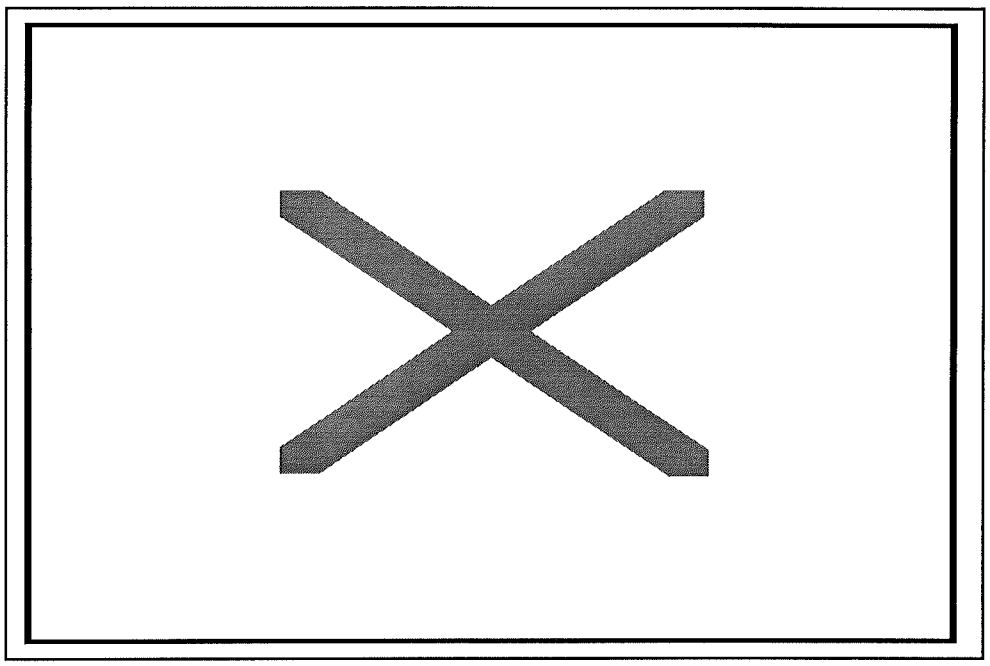


Degree of usefulness of Portugal



Degree of usefulness of Greece





3.6 GENERAL DISSEMINATIONS OBSERVATIONS

3.6.1 Elements that might have improved the training course

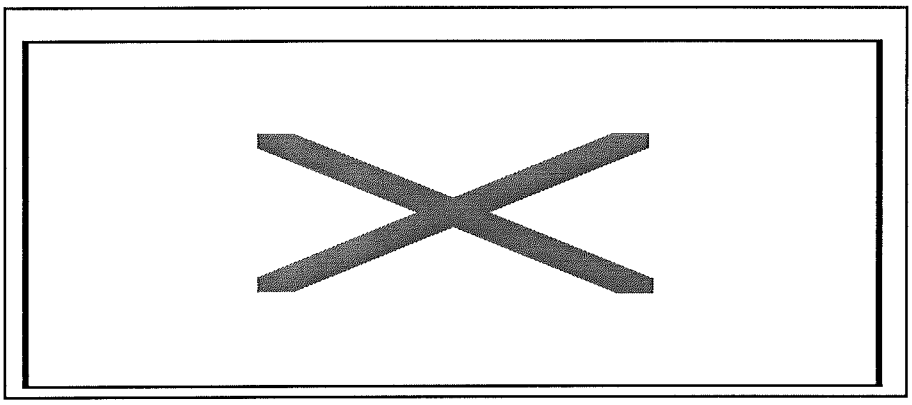
Concerning the possibility to improve the training course the School Leaders have suggested the use of virtual classroom with experts (19) (in spite of the negative views on virtual classroom, several SLs think it is worth trying it), followed by the use of self-learning material (17), more concrete and operational debating fora (16), more animation of fora (15) and a better selection of learning materials (13). Only 7 School Leaders have suggested the classroom-based lecture.

A point made by English SLs is that the pedagogical component of a professional development course might be extended by including collaborative 'on line' projects between teachers, requiring teachers to address a teaching issue (collaborative writing using the computer/E-mail, disruptive pupils) through short term action research and placing the results of both of these activities in the electronic conference area to stimulate further debate and extend perceptions.

3.6.2 Performance of School Leader's role through the training received

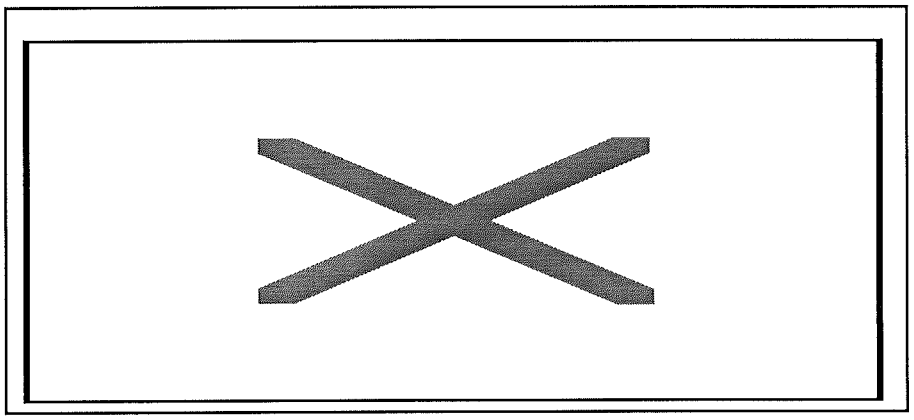
Concerning the usefulness of the training received in order to properly perform the school leader's role the answer has generally been positive (30 out of 36). The main problems or competence gaps concern ICT use and confidence (6), followed by competence in organising activities (3).

Some school leaders have stressed the lack of time (Spain) and the fact that the role of the School Leader is not recognised as a system function by the respective Ministry of Education as two elements of difficulty.



3.6.3 Meeting the expectations

Concerning this aspect, 27 out of 41 School Leaders have replied that the course has met partially their expectations and 10 of them completely. Only 4 School Leaders have expressed a negative assessment (3 Italians and 1 Spaniard). The main complaints coming from Italians regard the fact that the role of the school leader is not yet recognised, the lack of time and the difficulty to learn to use the ICT.



4. THE VIEWS OF PROJECT PARTNERS

4.1 CORRESPONDENCE OF SL'S TRAINING TO WHAT WAS EXPECTED

The partners involved have expressed on the whole a positive judgement on SL's training. They have obtained satisfactory results, though they had to work hard to overcome the difficulties found during the development of the project, and have developed positive attitudes towards the project's objectives and future exploitation.

The project has raised very high expectations in the TRENDS participating schools. The interest of School Leaders and the effort they have committed is far beyond what was initially expected from them. Leaders and the schools themselves co-operate and make a significant effort to contribute to the final success of the programme.

The SL's training went to a great extent according to plan but in some countries some variations to the initial plan occurred: in some cases the School Leaders were not selected at the early stage of the project and, consequently, they were not involved in the project activities on the adequate time. Due to that fact, and because of the school year programme the time available was not enough for the full training programme; secondly the school network was not established on time, i.e. when the School Leaders training started and the first meeting was held part of the schools were not yet provided with the adequate telecommunications infrastructure.

In Greece the national telecom operator could not provide ISDN lines to the participating schools, as the majority were located in the regions of Greece, where ISDN connections were scarce. Even in capital cities (Athens, Patras) the telecom infrastructure was completed with significant delay; thirdly the software development was not completed and tested until the beginning of September 1997, due to the extension of WP5 activities.

Prior to the project, teachers had little experience or confidence in communication technology. As the project progressed, some teachers recorded in their diaries their growing interest for the project and their growing ICT confidence.

English School Leaders demonstrated a critical approach to the use of internet resources and evaluated these materials for use in the classroom. An important aspect seems to be that although all teachers completed the same tasks and assignments, these were carried out within their own specialist subject and so were immediately relevant to their work in the classroom.

Two factors were crucial to achieve this success: in the first place on-line technical support during the set-up phase ensured that teachers could get help either by telephone, fax or e-mail; in the second face the role of the subject tutor was critical. The electronic conferencing facility supported discussion as it allowed "threads" to be drawn in the conversations between the subject tutors and teachers.

In Spain, Greece and Italy the virtual classroom scenario has been studied and planned, but not been fully implemented yet; SLs had recently the opportunity to use the videoconference tools in their schools and test the communication facilities. Moreover Spain has recently installed a chat server and hope to conduct a virtual classroom before the end of the school year.

Spanish SLs are aware that e-mail, discussion fora and distribution lists make this sort of training much more valuable than traditional distance training. Furthermore, they have started to do collaborative work to help one another and exchange experiences.

Because of the variations to the project plans (above mentioned) and the specific difficulties and constraints in the Greek site, the Collaborative learning was not implemented. However the Greek SLs were introduced to the notion of Collaborative Learning and its advantages during the national seminars and the Workshop in Crete.

The Greek School Leaders training had been mainly based on self-learning through either on-line material and guidance (web sites, catalogues, references) or printed and electronic publications (book, CD-ROM) provided by the Training Centre.

4.2 STRENGTHS AND WEAKNESSES OF THE SL'S TRAINING

One of the strengths of SLs' training mentioned concerns the introduction of the School Leaders to the training services and their involvement in training activities. This gave them the chance to get acquainted with technological innovations, new learning paradigms and educational applications of the ICT.

Another strength, stressed especially in Greece, regards the introduction of the SLs to a new role in the school operation and their motivation to deal with new demands and professional skills. On the other hand the weakness of this aspect is that the School Leaders were not sufficiently trained to deal with the new role. It would have been necessary to participate in an earlier stage into the project development, possibly since the beginning of the "users requirements specification".

They would have better understood the objectives of the school-based training and the particularities of the new role they were asked to fulfil.

A closer collaboration with the School Leaders of other countries would have allowed better organisation of the school-based training and more efficient monitoring and evaluation of teachers training.

The training model is highly based on some prior knowledge of the technology involved. If a trainee has no knowledge of how to use a computer and how to work around the systems tools and other software, he/she will need a much longer learning period than that of a more 'experienced' trainee.

Technical problems were the greatest barrier, but these are now largely solved. The main difficulty found by the SLs concerns hardware and software troubles. For almost all Spanish SLs this was the first time they had configured a computer with an ISDN card and this fact delayed the installation even more.

Moreover in Spain some leaders have found some problems during the installation of the client package and in their registration process: the installation of the Server Package took longer than expected because there was no Unix machine available and so the package had to be migrated to Linux by the technical staff of the Training Centre. The adapted version has caused some problems in the use of the TRENDS services.

4.3 SL'S APPRECIATION OF THE TRAINING OPPORTUNITIES OFFERED

Despite the fact that several complaints were due to technical inefficiencies and lack of time, the School Leaders have appreciated the opportunities offered by TRENDS and they have developed positive attitudes towards the project's objectives and future exploitation. Besides their role as SLs, some of them have embraced new roles, namely that of a teacher trainer in their area of expertise and in other technological areas.

In Portugal, for instance, some SLs are training teachers on the use of Internet, others are responsible for assisting the local training centre in technology issues. In England it has been set up a special enquiries and problems area where issues that came up during the course could be tackled. One member of the team was specifically devoted to this area. There was also a course director who scrutinised the SLs progress and a conference moderator who monitored participation in computer conferences.

As the majority of the School Leaders in Greece have been IT teachers and experienced users of computers and networks, they have appreciated more the training on the learning use of new technologies rather than the technical aspects of the services developed by the project. Even English SLs felt that they received excellent support from NCET over technical and pedagogical areas and their role. Front-end loading the training with small, incremental technical task provided the SLs with a sense of achievement and progression and enabled them to establish the competence and

confidence which enabled them to focus on pedagogic components.

The technical face-to-face meeting was boosted with an extra session where a technical consultant was employed to give extra tuition by phone, fax and mail, in the use of the software used in the project.

A point that was consistently made by English School Leaders and participating teachers was that the training needed to have a clear and obvious relevance to everyday teaching. The evaluation of web sites with a view to incorporating them into teaching programmes provided this pedagogical anchor. The inclusion of a task which compelled teachers to try out an ICT based activity with their pupils and report on its success was valued by many and reinforced the relevance of the training.

4.4 TRAINING OR INFORMATION NEEDS OF SL'S NOT YET COVERED AND REQUIRED FOR THE IMPLEMENTATION OF THE FOLLOWING PHASE OF THE PROJECT

One interesting finding from a series of interviews the English team conducted was that when the School Leader was not an ICT specialist the TRENDS model of training worked better. This was probably because some teachers are intimidated by enthusiasts and they feel safer when they are having their training managed by someone whose skills are not so far in excess of theirs.

Enthusiasm, interpersonal skills and personal ICT competence were seen as more important than technical expertise.

School Leaders still need support on the organisational aspects of the school-based training, i.e. they need guidance and specific instructions for the implementation of the learning scenarios.

Co-ordination is required for the integration of the training activities at the European level. School Leaders should be helped to organise collaborative learning and motivate their colleagues to get involved in collaborative projects.

Debating fora should be more concrete and operational and established at the international level.

The interoperability of the Training Centres is not merely a technical problem, which is expected to be solved. It is rather a matter of interest that should be stimulated by the TCs and the School leaders.

4.5 AREAS OF IMPROVEMENT ON WHICH A NEW GROUP OF SL'S SHOULD BE TRAINED

More importance and emphasis should be given to the development of the "new role" that the School Leader is expected to play. School Leaders training should focus on the new organisational skills and qualifications that should be acquired if a school-based training model is to be established.

School Leaders should establish a netiquette and might be "active teachers" and interrogate their colleagues about their perceptions, asking them for clarification, probing deeper in their questions.

4.6 IMPORTANT PROBLEMS FOR THE SUBSEQUENT PROJECT STEPS EMERGED DURING THIS PHASE - ENHANCING FACTOR EMERGING DURING THIS PHASE

Apart from the above mentioned problems and inefficiencies, which are mainly related to the project development (delay, lack of time, 'red flag procedure', short period of pilot phase training) there are no other significant problems emerged during School Leaders training. School Leaders are still committed to the project and willing to collaborate in order to complete school-based training and the evaluation procedures.

They do expect that the school-based training will continue somehow in the next school year, as they need time and better organisation of training activities in order to get the most out of the proposed training model.

The English partner has stressed that if there had been the possibility to revisit phase 2 of the project he would have given separate training on the role of the School Leader as a training manager, keeping their colleagues focused and on task.

5. THE VIEWS OF THE PROJECT USER GROUP

As originally planned and according to a recommendation expressed by EC officers during the negotiation phase occurring between technical approval of the project and its contractualisation, TRENDS has constituted a Project User Group consisting of representatives of Ministries of Education, DG XXII of the European Commission, the European Teachers Association and other experts in ICT in education.

The very special membership of the Group is due to the nature of the TRENDS project, which focuses on one of the critical areas of interest for all educational authorities in Europe: the in-service training of teachers through the use of ICT.

The Project User Group is obviously part of the evaluation system of the project and is consulted even between the official meetings, whenever the project has to face a critical/important passage in its life-cycle. Due to the initiation of the red flag procedure in October 1997, the Group was consulted as part of the in-depth internal review and required to express views according to the following seven questions:

a) the possible contribution of the TRENDS project to the in-service teachers training, in case the project considerably achieves the stated objectives;

b) the progress of the 18-month work (in general) and more particularly on the quality of D 4.1 and D 4.2;

c) the image of the project in the educational community in Europe;

d) the synergies of the project with other European or national initiatives in the field of ICTs applications in education (at school level);

e) the weaknesses of the project as it is set up and risks taken;

f) the European added-value of the results of the demonstration phase and

g) recommend exploitation strategies after the end of the demonstration phase.

The results of this consultation were annexed to the Internal Review Report. Though the comments were collected when SLs' training was not completed and they referred in broader terms to project achievements in the intermediary phase, we think appropriate to synthesise here the main results of this consultation:

- the TRENDS project was considered extremely focal to European developments of ICT in education, by experimenting a European approach to the critical problem of teachers training;

- the training model proposed was considered up-to-date and promising in methodological terms, although maybe too ambitious for a 30 months project;
- the image of the project was considered as good in the European education community, and the possibilities of synergy with many other project were identified;
- the risks of the project were mainly associated to time constraints, the European value added of the expected results was considered as extremely interesting, and a broad dissemination of results was recommended, not only towards other TAP-ET projects but also in other Programmes and at national level.

In the partners' view, these opinions were read as an encouragement to further invest in the project development, also taking advantage of a few serious elements of concern expressed by reviewers during the in-depth review undertaken.

6. OVERVIEW AND CONCLUSIONS

6.1 EVALUATION OF INTERMEDIATE RESULTS

As a whole, and with reference to the stated objectives, the TRENDS project has hitherto achieved some substantial results:

- the development of an in-service, school-based training system, using ICT has been substantially achieved in all six countries, with a very substantial coherence in the adoption of the proposed Teachers Training Model; the variations are normally due to external constraints rather than national divergences on the proposed approaches (see Deliverable D 4.4 for details);
- the organisation of training according to a set of common objectives and some common learning materials (see Deliverable D 4.3 for presentation of common materials), and the practical completion of training for 120 School Leaders in six countries;
- the establishment of the European Teachers' Training Network is practically completed, although the volume of transnational activities among SLs and teachers still need substantial development and some technical problems have been solved only recently;
- the growing institutional support achieved by TRENDS at national level and the achieved involvement of 2.400 teachers in six countries in an ICT–supported training programme based on the same model and the same objectives, although not perfectly homogeneous in organisational settings and timing;
- substantial progress has been done, through an integration of TRENDS in national initiatives, towards the exploitation of the project results in the medium term perspective. In most of the six involved countries TRENDS has achieved its institutional objective: to become part of the mainstream government action on ICT in schools, and to provide a bridge to other countries developments through teachers training (a bottom-up connection to complement concertation among Government representatives); where this objective is not yet achieved, some important partial results are anyhow available in terms of institutional support and recognition;
- from a large variety in initial national approaches (in organisation, culture, contents) a higher degree of coherence has been built in the life-span of the project: the process is a typical one in Europe. All national teams have provided some original contributions to the design of the model and to the implementation efforts (e.g.: methods to assess WWW sites from France, certification approach from Portugal, learning materials from the UK and Spain, etc.).A higher degree of coherence is possible in "pure" RTD projects, but TRENDS had a very significant

validation phase to be carried out according to national timing and constraints: the project proposal had to be made relevant and "digestible" in the national contexts, in order to involve 2.400 teachers.

On the negative side, the following elements should be identified:

- some significant delays were accumulated in year 2 by the project partners, and were then increased by the contractual obligation to stop substantial expenditure during the long (20/10/97 to 10/03/98) in-depth review associated with the red flag procedure;
- the level of implementation of the virtual classroom (both at national and European level) and collaborative learning scenarios (at European level only) was lower than expected and still needs further efforts to be made in the coming months;
- the capacity of the project to build absolute convergence among the implementation plans in the different member countries was not completely satisfactory for a number of internal and external reasons. However, substantial coherence exists in the acceptance of the TTT model and the basis has been established to build further convergence in the future (see D 4.4).

6.2 EVALUATION OF SCHOOL LEADERS' TRAINING

On the specific issue of SLs' training the project has also achieved important results:

- the direct and active involvement of 120 teachers (most of which had no previous experience of European Programmes and a limited knowledge of ICT) in a collaborative European project;
- their training through a common implementation model and on common objectives;
- their quick and effective familiarisation with ICT for education and training, with the ODL approach and, with some limitations, with their role of School Leaders. Only three people out of 120 abandoned the training programme;
- their substantial satisfaction on the training they were exposed to, with some obvious reservations expressed on timing, some technological constraints and, in some cases, the lack of possibility to experiment with some scenarios (virtual classroom) and more intensive European collaboration;
- their substantial acceptance of ODL as a way to be trained in the future (only a small minority requires more classroom-based seminars) and their capacity to involve other teachers of their schools in efficient use of ICT for teaching and learning.

In spite of delays, technical limitations, and the uncertainty period during which most

of their training was organised, the SLs have expressed a good judgement on both the utility of their training and its correspondence to the original expectations. The range of opinions expressed varies according to the country (with Portugal always leading the range of "the satisfied"), but this synthesis judgement is very reassuring for project partners.

Areas for improvement or completion of the SLs' training programme include further training on their role in the school and an increase of direct transnational activities with their fellow SLs of the other countries. Project partners are committed to further invest in these areas in the remaining project months.

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TRENDS - UK Outcomes

John Brown
Director, Lifelong Learning
British Educational Communications & Technology Agency (BECTa)
Athens
16-18 September 1998

TRENDS Outcomes

According to school managers, TRENDS resulted in increased:

- competence and confidence in ICT and management skills of school leaders
- interest in ICT training from other staff
- curriculum use of IT
- interest in developing student ICT skills
- staff co-operation in continuing professional development

Context characteristics of successful schools

- ICT firmly on school development agenda
- Supportive headteacher
- Staff frustration with traditional models of CPD

Support characteristics of TRENDS model

Online

- subject expert
- technical expert
- central support team
- electronic forms and diaries

In school

- school leader

Characteristics of successful school leaders

- Good personal ICT competence but not always the ICT co-ordinator
- Enthusiastic
- Good interpersonal skills

Distinctive features of TRENDS approach

Module 1 (A)

- Incremental progression
- Sound technical support by
  - phone
  - fax
  - email

Module 2 (B)

- Integrated with classroom practice
- Relevance to everyday teaching

Extending the pedagogical component

Electronic conferencing based on:

- collborative online projects for teachers
- short term action research a teaching issue

TRENDS - critical success factors - technology

- Access to ICT equipment when and where needed (quality of ICT provision not necessarily an impediment)
- Asynchronous nature of the course

TRENDS - critical success factors - support

- Rapid response of central team
- Online technical support
- Technical support in school
- Electronic conferencing (Phase I)
- Online experts (Phase I)

Phase II paradox

- Electronic conferencing not sustained to same degree in Phase II
- School leaders often substituted on-site support instead

Explanations offered by the central team

- Participation was not a requirement of the course
- Teachers were under time pressures
- Access to ICT equipment was critically important (home access made things easier for some teachers)
- Teachers were well supported by school leaders

Explanations offered by the teachers

- Teachers were under time pressures
- UK teachers are not used to talking to each other
- Virtual contacts need to be preceded by actual contact
- Teachers feel 'exposed' by participation in conferencing

Characteristics of online experts (school leaders' perceptions)

- Enthusiasm for the subject
- Authority and expertise
- Good (virtual) interpersonal skills
- Effective online communication tactics
- Contributed appropriate teaching ideas
- Overtly supportive

Effective online communication tactics

- Responding to every message
- Being active in interactions
  - questioning
  - probing
  - requesting clarification
  - suggesting further activity
- Seeding the conference with ideas
- Encouraging feedback

Extending the TRENDS experience

- Developing the concept of the school leader
- Enhancing ICT provision for staff use
- Using intranets for sharing 'approved' mateials

Further comments by teachers

- Limited value of most one-off courses
- TRENDS certificates highly valued by some
- Role of staff intranets for staff development
- Teacher enthusiasm generates demand for more ICT equipment

Sample communications from Phase I teachers

Michelle

Hello, I thought I would visit the Trends web site before I start surfing. I'm really getting into this project and hurry into school each morning to read my messages. Does this constitute signing the visitor's book?

Regards

Mary

Sample communications from Phase I teachers

Michelle

I still have a problem emailing directly off an internet page but I think this is a software problem which I will have to find out about so I am creating this off-line and mailing it through my normal mail provider. I am finding this really useful so far though, having learnt in a week more than I have learnt in a whole year of undirected 'surfing'.

Thanks

Ian

Sample communications from Phase I teachers

Monday 16 June

Logged on and checked for any messages. A message from Janice says that I must send my next diary directly to you because everyone can read it on the conferencing but she didn't tell me how to do that. I'll think about it for Monday when I've got to send in the next diary. Had a look around all the folders and noticed that something was going on in the chat section of the leisure centre so I joined in. Jeff was in there so I had a chat with him, great fun which I know pupils would enjoy as much as I did.

Sample communications from Phase I teachers

Monday 16 June

At the moment I'm logging on every day to check for any messages in the folders.

Starting to think about the next task - reviewing a web site and publishing my report, not sure whether to review Birmingham's maths site.

Spent about 1 1/2 hours at the computer.

Sample communications from Phase I teachers

Tuesday 17 June

Checked messages again and had a chat with Mary and after she went with Jennie Brown (being a Brown obviously is important!) Still thinking about which web site to review and trying to investigate an Australian web site (SMARD) found through the Irish Maths Teachers' pages. (I gave people in the maths conference the address). Spent about an hour at the computer.

Sample communications from Phase I teachers

Wednesday 18 June

Checked messages and left Janice a message about how to give my diary to Ronnie without it being in the conference for everyone to read. She quickly replied and I think I've figures it out. Went into the chat room and found you (Ronnie) in there! Had a 2,3 and then 4 way chat, only problem is that by the time you've typed your messages someone else has changed the subject and your comment is irrelevant. It's also difficult to follow the conversation between people.

Sample communications from Phase I teachers

Wednesday 18 June

Conferencing is good fun but for more than two people I think I would find it confusing! I've decided to review the Birmingham Maths web site and am starting to write my report and so spent some time (about an hour) looking around the site and trying to avoid the temptation of going off into other maths links, I find it difficult to resist! Spent about 1 1/2 hours before I had to log off, in danger of going cross-eyed!

Sample communications from Phase I teachers

I wasn't able to get on the computer Thursday or Friday due to the technicians changing the computers over and associated problems, so I was unable to send you my diary.

It doesn't look like I'm going to be able to get the first assignment in on time either, so I'm worrying a little.

Trends

ODL POLICY SEMINAR PROJECT

POLITIQUES DE SOUTIEN A L'ODL EN EUROPE

Réalisé avec le concours du Programme Socrates ODL
Commission Européenne - DG XXII

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1ERE SECTION
PRINCIPAUX REFLEXIONS ET RESULTATS DU PROJET

1. INTRODUCTION

Le projet "ODL Policy Seminar" (réalisé dans le contexte du Programme SOCRATES) se propose de contribuer à la création d'une base commune de compréhension parmi les "decision makers" européens (au niveau national et régional) qui sont insérés dans la définition, l'exécution et l'évaluation des politiques dans le cadre de la Formation Ouverte à Distance (ODL - Open and Distance Learning).

Étant donné que les rencontres officielles ne consentent aux "policy makers" d'avoir des échanges informelles d'opinions, ni d'acquérir une connaissance organisée des différents problèmes, on a ressenti la nécessité d'organiser des forums et des séminaires informels où les problèmes liés à l'ODL peuvent être abordés du point de vue des *policy makers*, et pourtant sans la pression de devoir atteindre une position commune.

Tout en étant conscients de cela, le projet "ODL Policy Seminar" a proposé l'organisation d'un séminaire annuel sur les problèmes de l'ODL conçu en tant qu'un espace neutre et informel pour l'échange d'opinions et d'expériences.

Concrètement, le projet a stimulé l'organisation d'un premier Séminaire à Florence (Octobre 1996) et d'un séminaire au caractère davantage opérationnel à Copenhague (May 1997), ainsi que la réalisation d'une enquête sur le champ concernant les problèmes et les secteurs d'intérêt des *policy makers*.

Les partenaires du projet ont finalement participé activement à des séances qui portaient sur les politiques ODL dans le contexte des congrès organisés au niveau européen, et ils ont jeté les bases pour l'activation d'un forum électronique ouvert à tous les acteurs concernés.

Cette publication synthétise les principaux résultats du projet SOCRATES ODL.

La structure du document en reflet les objectifs: le 2ème Chapitre récupère la tentative de classer les politiques ODL mise au point et résume ce qui a été atteint par le projet au sujet de définitions, classifications et compréhension du processus décisionnel des politiques dans le domaine des ODL; le 3ème Chapitre présente les principales issues du Séminaire de Florence; le 4ème Chapitre résume les résultats des travaux de Copenhague tout en récupérant aussi quelques unes des conclusions les plus importantes du Séminaire de Florence de 1996 à propos de sept questions clé: chacune de ces sections représente un sujet de débat du forum électronique, qui est ouvert à d'ultérieurs apports et enrichissements; pour conclure, le 5ème Chapitre rassemble un certain nombre d'études de cas sur les politiques adoptées par les partenaires du projet et par les participants au séminaire.

SCIENTER, en tant qu'organisation coordinatrice du projet, aimerait remercier les partenaires et tous ceux qui ont pris part aux séminaires, qui ont contribué à la création et à la consolidation d'un forum important, où l'expérience et les idées nouvelles peuvent circuler librement en contribuant au renforcement d'une culture professionnelle spécifique parmi les personnes engagées dans la formulation des politiques et de leur application dans ce domaine particulier.

Un remerciement tout particulier est adressé à la Commission Européenne, qui a soutenu les deux premières années de l'activité du projet, et au Bureau d'Assistance Technique de SOCRATES.

2. UNE TENTATIVE D'ENCADREMENT CONCEPTUEL POUR LES POLITIQUES ODL

2.1 LE TERME OPEN DISTANCE LEARNING (ODL)

Il n'est pas facile de définir le terme ODL, car il s'agit d'une combinaison entre apprentissage ouvert et apprentissage à distance, là où les deux notions ont toutes un signifié plus compréhensible et reçu.
Le Mémorandum de Décembre 1991 proposé par la Commission Européenne a, cependant, produit un effet extraordinaire en occasionnant l'acceptation et l'usage au niveau européen de ce terme "hybride" par la grande partie des chercheurs, des opérateurs et des *policy makers*.
Même à l'intérieur du projet SOCRATES ODL on a pu remarquer nettement que le terme ODL n'est pas perçu de la même manière dans les différents pays et contextes. Par exemple, alors que la majorité des participants aux séminaires était d'accord sur une acception élargie d'ODL, en incluant l'usage des Technologies de l'Information et de la Communication (ICT) dans le processus d'apprentissage, d'autres étaient en faveur d'une acception plus réduite d'ODL, en localisant l'usage des ICT hors du contexte de la classe.
Outre le rapport ambigu avec les termes liés à la technologie, l'abréviation ODL englobe des contradictions intrinsèques qui ne sont pas facile à résoudre: l'apprentissage à distance n'est pas tout "Open" (ouvert) et "flexible" (sauf les dimensions de l'espace), et l'Open Learning n'est pas tout à distance, étant donné que plusieurs formes de Open Learning ne sont pas liées à la notion de distance et réalisées à l'intérieur d'un contexte donné, même à l'intérieur d'une classe.
Malgré ces ambiguïtés le terme ODL s'est affirmé en se référant à toutes les approches fondées sur l'apprentissage pour l'instruction et la formation, et il est habituellement (mais pas exclusivement) associé à une méthode consciente de l'usage des ICT.

2.2 DÈFINITION DES POLITIQUES ODL

On ne peut pas affirmer avec certitude que le signifié du terme sur la base duquel on a construit ce projet, ODL *policy*, ait été acquis: en effet l'ODL ne représente pas un domaine traditionnel de la politique publique, mais plutôt un moyen pour appliquer certains éléments qui relèvent des politiques plus vastes, comme les politiques liées à l'innovation des systèmes d'éducation et de formation, ou de ceux du développement régional ou industriel.
Au cours des quinze dernières années un certain nombre de politiques spécifiques pour le développement d'ODL ont été entamées dans plusieurs pays européens et par la Commission Européenne: habituellement (mais pas toujours) celles-ci ont la tendance à se manifester après un certain nombre d'expériences où l'on a pu vérifier le potentiel de l'ODL, ont une durée d'à peu près cinq ans et se présentent en tant que mesures spécifiques pour rendre l'ODL une composante "normale" des systèmes éducatifs et de formation; finalement elles sont intégrées à l'intérieur des politiques plus vastes.
Ainsi, les politiques spécifiques de l'ODL, qui existent, ont toutefois tendance à avoir une durée limitée, tandis que beaucoup de politiques publiques plus étendues comprennent le développement de l'ODL spécifiquement ou implicitement.

L'objet du projet est donc triple:

- les politiques spécifiques en matière d'ODL
- les politiques publiques plus étendues qui comprennent le développement de l'ODL
- le "contenu des politiques": les mesures spécifiques et les programmes de l'ODL qui n'atteignent pas le statut d'une "politique"

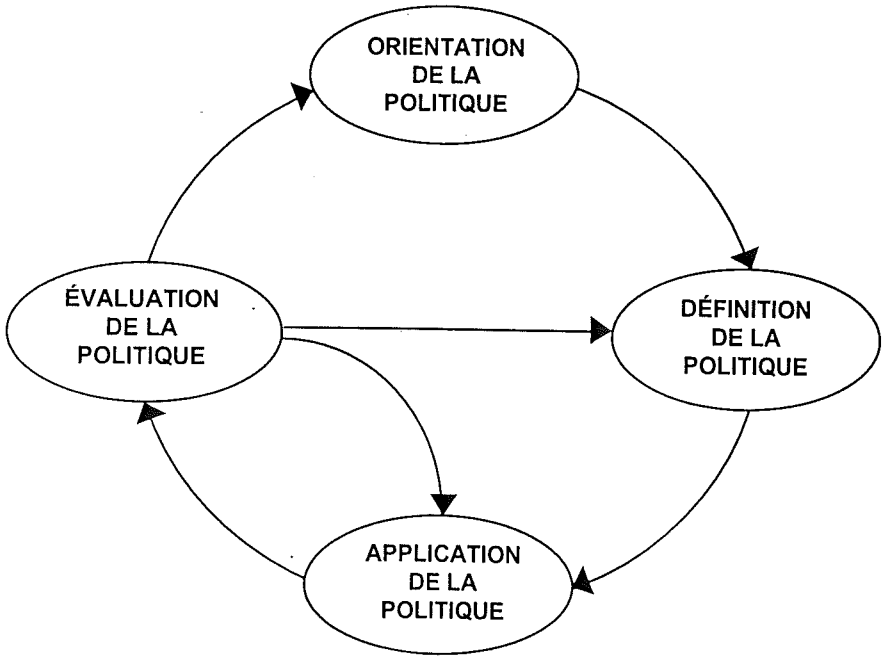
Afin de comprendre la troisième catégorie, il faut donner quelques précisions:

- une Politique est caractérisée par un ensemble d'objectifs et de priorités cohérents, par une durée assez prolongée e par une allocation constante/stable de ressources;
- un Programme est un mécanisme qui sert à entamer un ensemble cohérent d'actions afin d'influencer certaines dimensions spécifiques ou d'atteindre des objectifs qui relèvent des politiques. On peut bien le considérer comme un instrument apte à réaliser une politique plus vaste (par exemple, un Livre Blanc, un Mémorandum de l'Union Européenne, ou des Programmes comme Leonardo Da Vinci, SOCRATES, COMETT, etc.);
- une Mesure est une action spécifique (une partie d'un cycle d'actions) en termes de temps/durée, d'allocation de ressources, de contenus (par exemple, le soutien à la mobilité des étudiants dans le contexte des Programmes SOCRATES);
- le contenu des politiques est le rapport qu'un programme spécifique ou bien une mesure a en tant qu'objectif spécifique ou implicite de la politique: plus étroit est ce rapport, plus élevé est le contenu des politiques aussi bien que, par conséquent, le relief politique du programme ou des mesures.

2.3 LE PROCESSUS DE POLICY MAKING

Lorsqu'on parle des politiques de l'ODL dans le cadre de ce projet on veut bien se référer à quatre phases-clé:

- l'orientation des politiques, la phase dans laquelle on définit les buts de l'intervention publique et le rapport entre les espaces politiques. Dans cette phase l'orientation politique de l'autorité promotrice joue un rôle décisif, même si parfois c'est la pratique d'"emprunter des politiques" qui l'emporte moyennant d'orientations politiques conventionnelles;
- la définition des politiques, où l'on choisit parmi une série de mesures possibles qui peuvent être utilisées afin d'atteindre les même buts; cette phase est caractérisée par un niveau plus haut de contenu technique et elle est davantage influencée par des attributs nationaux ou sectoriels, ainsi que par des obligations institutionnelles et financières des autorités proposantes;
- l'application des politiques, la phase où une série de mesures concertées est réalisée par une administration publique avec l'éventuelle contribution d'autres acteurs publiques et particuliers. Dans cette phase la question du partenariat est fondamentale;
- l'évaluation des politiques, qui n'est pas, effectivement, une seule phase, mais plutôt un processus continu qui touche aussi aux trois autres phases et qui contribue à l'orientation des politiques futures.



Le travail accompli au cours des séminaires de Florence et de Copenhague reflet cette représentation du cycle de *policy making;* il faut toutefois ajouter que l'orientation et la définition avaient été considérées collectivement dans le débat initial, jusqu'au moment où l'on a aperçu qu'il s'agissait de deux domaines problématiques distincts et que les deux phases devaient être séparées.

2.4 LE CONTEXTE DES POLITIQUES DE L'ODL

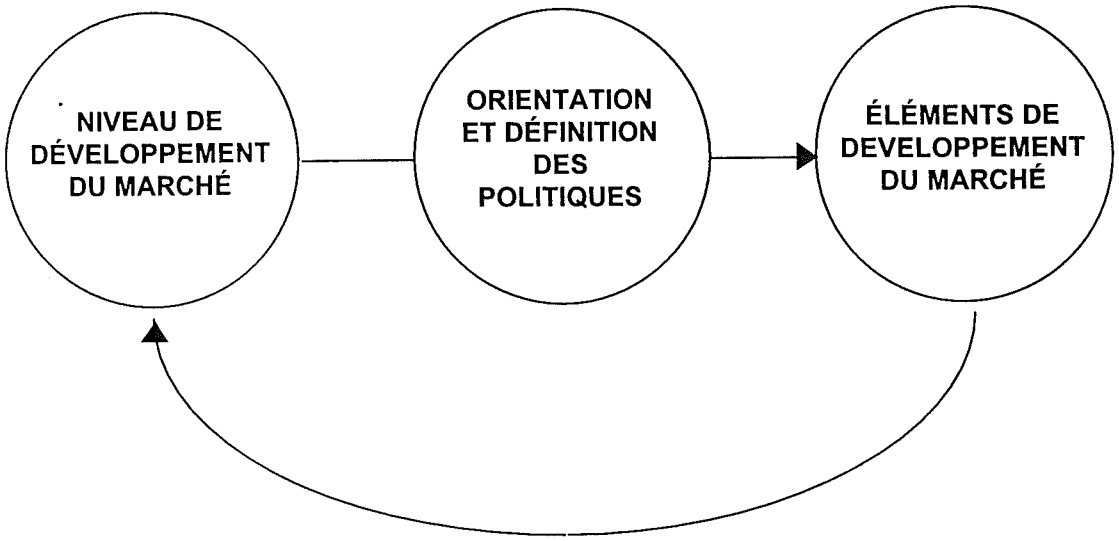
Chaque politique publique est influencée, et dans une large mesure déterminée, par le contexte où elle est projetée et réalisée.
Parmi les différents aspects qui devraient être pris en considération, le niveau de développement du marché de l'ODL a été considéré comme un élément contextuel prioritaire dans l'approche adoptée par le projet.
Cela signifie que de différentes mesures publiques sont fonctionnelles aux différentes phases du développement du marché (typiquement, les mesures publiques débutent en ayant une fonction de soutien par rapport à l'offre et passent graduellement au soutien des infrastructures et à la demande).

Outre le développement du marché, d'autres importants éléments contextuels ont été identifiés:

- le rôle de l'ODL dans la carte des politiques publiques nationales/locales;
- les caractéristiques culturelles et socio-économiques nationales/régionales/locales;
- le cadre institutionnel et législatif;
- le secteur d'intervention des initiatives publiques (école, éducation supérieure, formation, etc.);
- la tradition du processus de formation des décisions (rôle des acteurs sociaux, partenariats publiques/particuliers, etc.);
- les caractéristiques et les conditions des systèmes éducatifs et de formations auxquels les politiques d'ODL s'adressent.

2.5 INTERVENTION PUBLIQUE ET DÉVELOPPEMENT DU MARCHÉ

On a fait mention du niveau de développement du marché en tant que l'un des éléments contextuels déterminant l'orientation et la définition des interventions publiques. De l'autre côté, l'intervention publique va influencer les différents facteurs de développement du marché, en modifiant ainsi le niveau et les caractéristiques de développement du marché.
De cette manière on établit un cycle, étant donné que les initiatives suivantes, publiques ou particulières, devront tenir compte de l'impacte des actions précédentes sur le développement du marché.



2.6 UNE TENTATIVE DE CLASSEMENT DES INITIATIVES PUBLIQUES À SOUTIEN DE L'ODL

Dans la rapport DELTA-EIOL sur les "Politiques à soutien du développement du marché de l'Open Learning en Europe" on avait identifié une gamme de politiques possibles. Chaque politique avait été définie en tant que:

a) rapport avec les objectifs qui légitiment actuellement l'action publique (environnement social, échec du marché, extériorité);
b) probable impact du côté de la demande ou de l'offre du marché de l'ODL;
c) analyse des coûts et des bénéfices.

Le classement suivant présente les douze principales catégories repérées relativement aux politiques de l'ODL sur la base de leur nature. L'application d'une politique peut interférer avec de différentes logiques et peut impliquer l'utilisation de différents instruments (légaux, institutionnels, techniques, financiers).

1. ***Soutien financier aux consommateurs.*** Afin de garantir à tous l'accès à l'ODL, des systèmes et des mesures financiers pourraient être mis au point pour soutenir les groupes d'usagers de l'ODL. Cette méthode de soutien pourrait prendre la forme de bourse d'études, de prêts e de permis de formation. En termes d'analyse coûts-bénéfices, le coût doit être comparable aux bénéfices attendus, où les deux aspects sont mesurés non seulement en termes d'effets directs mais aussi en termes d'effets indirects, par exemple l'extériorité ou l'amoindrissement des inégalités sociales. Si, par exemple, on estime qu'un système de formation ODL est en mesure de créer d'importants éléments d'extériorité (par exemple sous forme de diffusion d'une approche moderne à l'apprentissage et, plus en général, à la culture), ces bénéfices déplaceraient positivement la courbe de la demande et ils légitimeraient les politiques des prix susmentionnées.

2. ***Soutien financier aux producteurs.*** Etant l'ODL une industrie caractérisée par un degré d'innovation très marqué, les encouragements financiers peuvent être nécessaires afin de promouvoir un essor rapide e de réduire les coûts de la recherche et du développement. Cet objectif pourrait être atteint moyennant la distribution de prêts "légers" – en quelque mesure semblables aux prêts pour l'innovation technologique qui ont été introduits dans plusieurs pays – ou sous forme de consistant co-financement de la production.
   L'exemple constitué par un subside au prix peut être appliqué aussi bien au contexte d'une politique qui a pour but de protéger une "industrie naissante" (dans certains pays l'ODL est encore une industrie naissante). Si le gouvernement veut sauvegarder les producteurs nationaux par rapport à la compétition internationale, il peut: a) garder le prix Pi bas en affectant un subside qui correspond à la différence de prix (Pa-Pi); b) taxer un montant de l'ODL au coût (Pa-Pi), ou c) ériger des barrières commerciales sur l'importation.
   Ces options ne peuvent être justifiées que lorsque «l'industrie naissante» peut se développer rapidement et devenir immédiatement plus compétitive, de façon à pouvoir ôter n'importe quelle barrière sur les importations.

1. ***Appel d'offre publiques.*** Une forme non-financière de soutien aux producteurs est constituée par une politique visée d'appel d'offre publiques. Les gouvernements peuvent exhorter les entreprises publiques et particulières à soumettre des propositions pour des programmes d'ODL financés publiquement et qui sont réalisés dans le cadre de ces organisations publiques pour leur personnel.
   Cela peut attirer de nouveaux acteurs dans le secteur et encourager les entreprises existantes à tenir en plus grande considération les opportunités de l'ODL.
   Les changements qui peuvent avoir lieu dans le marché de l'ODL en conséquence d'une impulsion à la courbe de la demande qui dégage d'une politique d'appel d'offre concernent

la courbe de la demande elle même, qui va se déplacer vers la droite avec la hausse des prix et l'augmentation des matériaux produits.
Le nouveau prix va mobiliser de nouvelles ressources dans le secteur de l'ODL; si les barrières à l'entrée sont faibles et les appels d'offre sont ouvertes à de nouveaux acteurs, de nouvelles entreprises vont s'insérer dans le marché. La concurrence ainsi consolidée grâce à un plus grand nombre d'entreprises – une fois que davantage d'économies d'échelle ont été atteintes et que la courbe d'apprentissage a progressé moyennant les grandes quantités qui ont été produites – cela aura un effet sur la courbe de l'offre (les coûts marginaux vont diminuer).
Dans beaucoup de pays une large tranche du système d'éducation/formation est publique. La présence d'éléments typiques de l'ODL dans les activités d'éducation/formation (sauf quelques exceptions) est très limitée et les politiques fondées sur les appels d'offre publiques peuvent apporter une contribution efficace dans le développement du marché de l'ODL, aussi bien du côté de la demande (en stimulant la production), que du côté de l'offre d'ODL (en introduisant l'ODL dans les cours traditionnels).

4. ***Prix et tarifs.*** Une forme différente de soutien financier peut être fournie moyennant la définition d'un système de prix pour le matériel de formation ODL et de tarifs pour l'utilisation de services de télécommunication. Les prix «imposés» pour le consommateur/producteur et les tarifs auraient un effet aussi bien sur la demande que sur l'offre dans le marché de l'ODL.
Les résultats du soutien financier peuvent être évalués sur la base de l'approche employée. Cependant, il est important de souligner le rôle des «biens complémentaires», qui peut être éclairci grâce à l'exemple des ordinateurs: l'achat d'un ordinateur pour la formation en ODL peut représenter une somme considérable pour une personne, en dépassant amplement le coût du matériel ODL en soi et en constituant ainsi une barrière à l'accès aux formes modernes de l'ODL.
Le soutien dans l'achat d'un ordinateur (par exemple moyennant un prêt facilité) peut rendre les activités de l'ODL plus accessibles. Le subside dans l'achat des ordinateurs peut être justifié suivant des critères sociaux (personnes à bas revenu, communautés désavantagés), mais aussi en termes d'extériorité par rapport aux activités de l'ODL. Un programme d'aides à même d'accroître le nombre de consommateurs dans un secteur tel que l'ODL, caractérisé par des hautes économies d'échelle, va réduire le coût marginal et moyen de la formation; les économies dans les activités de formation pourraient compenser le coût du subside pour l'achat d'équipements informatiques.

5. ***Recherche et développement.*** Au moment où des exigences particulières sont identifiées, il faudrait analyser le marché afin d'établir s'il est en mesure de les satisfaire. Lorsque les capacités n'existent pas, des actions publiques peuvent être entamées afin de promouvoir une réponse adéquate. Ce résultat peut être atteint moyennant une intervention directe sous forme de réalisation de bureaux publiques pour la recherche et le développement ou en soutenant les investissements du secteur particulier dans le domaine de la recherche et du développement.
Une telle approche prévoit que le gouvernement s'intéresse au développement de nouvelles méthodes de formation du type *open learning* en utilisant de nouvelles technologies ou de nouveaux instruments d'apprentissage, et qu'il prenne en considération le financement d'un programme intensif de recherche et développement qui doit être géré par des structures publiques ou par des sociétés particulières.
Ce sujet se relie à la mesure du rendement des activités de recherche et développement. Les coûts du programme concordent avec les coûts réels de financement pour la réalisation du programme (journées, équipements, frais généraux). Estimer le retour économique du programme de recherche et développement est plus compliqué, car il dépendra de l'application des innovations.

Si l'innovation ODL est introduite dans les cours de formation publiques existants, (dans un contexte marqué par un offre fixe global), le retour sera pour la plupart constitué par des résultats d'économie sur les coûts liées aux activités qui se déroulent. Si les produits ODL sont commercialisés, le retour sera composé par le prix de vente multiplié par le chiffre des unités vendues.

Dans les deux cas, lorsque les valeurs financières ne correspondent pas aux valeurs sociales, les premières doivent être réglées afin qu'elles reflètent leur valeur réelle. En admettant que l'on puisse raisonnablement estimer le retour prévu, on peut donc évaluer l'avantage du programme de recherche et développement en tant qu'aisance acquise grâce aux changements de l'offre.

Si le programme de recherche et développement est profitable, il faut alors définir les modalités de réalisation, soit-elles dans le cadre des activités publiques où par des entreprises particulières qui pourraient être mieux équipées. Au cas où il n'existe pas de compétences disponibles, le programme de recherche et développement peut donc être relié avec des actions visant à créer de nouvelles institutions.

6. ***Création des institutions.*** Lorsque le marché présente des imperfections, l'action publique peut soutenir le marché moyennant la constitution d'institutions. Parmi les exemples on mentionne l'Université Ouverte, les Centres publiques de recherche et développement sur les technologies et les méthodes ODL; les organisations d'information et les organisations compétentes en matière d'ODL; les centres pour la formation et le développement en ODL. On peut adopter le cadre pour l'analyse des programmes de recherche et développement afin d'évaluer d'autres types d'actions publiques qui impliquent des coûts publics engendrant des bénéfices indirects en termes d'augmentation de l'offre.

   Une fois légitimée la nécessité pour une action publique à cause des imperfections du marché, le coût trop élevé concernant le soutien au marché moyennant la création de nouvelles institutions (Universités Ouvertes, bureaux ordinaires, bureaux informations, centres de recherche et développement, unité d'assistance technique) est estimé sur la base des bénéfices sociaux prévus.

7. ***Assistance technique.*** Les organisations qui s'occupent de formation, aussi bien celles qui existent déjà que celles qui vont se constituer, peuvent nécessiter d'assistance technique dans l'introduction de programmes innovateurs dans l'ODL. L'assistance technique peut adopter de différentes modalités:
   a) assistance méthodologique;
   b) assistance technique;
   c) assistance à plusieurs usagers.

   La réalisation d'actions publiques peut être:
   a) directe, grâce à la création d'un centre d'assistance technique, suivant les indications susmentionnées concernant la réalisation de nouvelles institutions;
   b) indirecte, moyennant la promotion de services d'assistance technique particulière (par exemple, en passant des contrats avec des sociétés particulières);
   c) encore moins directe, par une action de formation pour les personnes qui vont constituer un vecteur de propagation du savoir-faire.

   Chaque choix offre des avantages et il doit être défini par rapport au contexte spécifique. Plus bas est le niveau de développement du marché et plus directe doit être l'intervention; les coûts et les bénéfices du choix sélectionné devront être évalués de la même manière que dans les cas concernant la recherche et développement et la création des institutions.

8. ***Politiques légales/régulatrices.*** Ces politiques ont pour but de protéger la «propriété» et l'«échange» de droits dans le secteur ODL. Cela comprend des mesures spécifiques telles que la certification de la formation ODL acquise/fournie aussi bien que des mesures plus générales et la consolidation des lois sur les Brevets ou de la Législation Anti-Trust.

Lorsque l'achat d'ODL est aperçu par les gens comme un investissement, il faut que cet investissement soit reconnu par le marché en tant que tel. Si l'ODL avait un statut légal inférieur à d'autres types de formation traditionnelle et les entrepreneurs se montraient sceptiques à l'égard de sa modalité, les gens seraient découragés par rapport à l'achat d'ODL en tant qu'investissement en capital humain. La demande pour l'ODL (aussi bien directe que par l'intermédiaire d'organisations de formation) s'affaiblirait.

Cela accroîtrait probablement la demande pour des formes alternatives (plus traditionnelles) de formation. Si la qualité de l'ODL est meilleure ou au moins équivalente à celle d'autres genres de formations, le déplacement conséquent dans la quantité de la demande de formation pourrait créer une mauvaise allocation des ressources et des pertes sociales.

La certification des standards de formation atteints par l'ODL envoierait des signaux positifs au marché de l'ODL. Le coût serait probablement très bas (par exemple, le coût de la création d'une organisation qui s'occupe des standards ODL), mais les bénéfices sociaux pourraient être élevés.

9. ***Accords, normes et codes de conduite.*** L'action publique est en mesure de promouvoir et d'encourager les accords entre les parties. Ces accords n'exigent pas nécessairement l'existence d'un statut légal jusqu'à ce qu'ils établissent les normes et les codes de conduite pour les parties concernées. Ces accords pourraient, par exemple, faciliter l'accès à la formation en ODL pour les travailleurs, préciser les conditions de l'absence du lieu de travail afin de suivre la formation, déterminer les conditions pour l'accès prioritaire aux systèmes ODL pour les personnes désavantagées.

   Les accords entre les parties concernées peuvent être efficaces afin d'améliorer la fluidité du marché de l'ODL. Un exemple typique est celui des accords entre les employeurs et les syndicats qui déterminent les conditions générales dans le contexte où les travailleurs peuvent fréquenter les cours ODL à l'intérieur et à l'extérieur de l'entreprise.

   Ces accords peuvent adopter deux formes principales:

   a) ils peuvent convenir sur le fait que de différents groupes peuvent bénéficier de l'ODL (par exemple les entreprises, les employeurs, les sociétés) et peuvent partager les coûts relatifs de façon proportionnelle;
   b) ils peuvent poursuivre des modes et des méthodes de réduction absolue du temps passé en dehors du lieu de travail, en limitant les pertes en termes de production pour l'entreprise e de revenu pour chaque travailleur.

   Les accords pourraient aussi déterminer des conditions particulières d'accès aux cours de la parte des groupes les plus faibles de l'entreprise (travailleurs avec un bas niveau d'éducation, jeunes, femmes). En réduisant le coût d'accès aux activités de l'ODL (aussi bien pour l'entreprise que pour le travailleur), les accords tendent à soutenir la demande pour l'ODL. En même temps ils peuvent contribuer à déterminer et à appliquer des formes plus équitables d'accès aux opportunités de formation de la part des groupes les plus faibles.

10. ***Information.*** Pourvoir une information correcte et précise est l'une des tâches et des sujets les plus importants dans l'agenda publique d'intervention.

    Publiciser les opportunités de formation en ODL permettrait aux consommateurs de connaître de nouvelles modes de distribution de la formation; une action d'orientation pourrait être organisée en faveur des élèves; des informations statistiques sur la demande en ODL pourraient assister les fournisseurs dans le planning de la formation.

    Le secteur ODL est caractérisé par l'innovation en tant que méthodologies de formation et technologies adoptées. Il est impératif que les potentiels acquéreurs d'ODL aient familiarité avec toutes les possibilités créées par l'innovation dans l'ODL, et que les producteurs jugent le marché potentiel de l'ODL, étant donné que:

    a) de vastes domaines de production de l'ODL font partie du secteur public;

b) de vastes segments d'intermédiaires dans le secteur de la formation font partie du secteur public;
c) c'étant les autres producteurs et usagers très dispersés, l'action publique doit prendre en change la diffusion de l'information adéquate et opportune.

Les bénéfices prévus semblent considérables non pas en termes de diminution des «coûts d'échange» sur le marché ODL mais, bien plus important, en termes de traduction de la demande d'un état de latence à un état explicite et de soutien à l'offre qui s'en suit.

11. ***Création d'infrastructures physiques.*** Le secteur public détient souvent le monopole de l'offre d'infrastructures de base et de services, ainsi que des télécommunications, et il a tendance à jouer un rôle très fort (même dominant) dans l'industrie des média. Une ligne d'action possible pour le gouvernement demeure donc dans la distribution d'un offre adéquat d'infrastructures et de services indispensables aux activités de l'ODL.
Les infrastructures donnent lieu à un haut niveau d'extériorité, elles impliquent des coûts de départ très élevés et elles ne garantissent un retour économique adéquat que quand on atteint des économies d'échelle très élevées. L'utilisation des infrastructures pour l'ODL peut être intensif pour la transmission des données et des images. Par rapport à l'action publique, la portée est double: a) déterminer si le réseau des infrastructures est suffisamment étendu pour répondre aux exigences des usagers de l'ODL (rejoindre des zone lointaines, être accessible aux gens) et b) déterminer les conditions d'accès des usagers ODL aux infrastructures (temps, coûts, formes de contrats avec des agences publiques). Certaines questions liées aux infrastructures, comme les tarifs, ont été débattues en se reliant à des catégories politiques différentes.

12. ***Création d'"infrastructures humaines".*** Certaines actions peuvent aussi viser à la création d'infrastructures humaines (compétence et expérience) indispensables pour développer l'ODL sur une échelle importante. L'investissement en capital humain relève souvent de l'action publique directe. Cela vaut tout particulièrement dans ces domaines, comme l'ODL, où un vaste domaine de production et/ou de consommation des biens ultimes est publique. Les infrastructures humaines accroissent la capacité de production du domaine et impliquent un niveau d'extériorité considérable pour d'autres domaines.

3. SYNTHESE DES RESULTATS DU SEMINAIRE DE FLORENCE (15-18 OCTOBRE 1996)

Le premier séminaire du projet, qui a eu lieu à Florence du 15 au 18 Octobre 1996, a confirmé les objectifs de départ, et en particulier:

- créer un réseau pour l'action commune, l'échange d'expériences et de réflexions;
- réaliser de différents forums électroniques portant sur plusieurs sujets en matière d'ODL afin de poursuivre constamment le débat et l'échange d'expériences après le séminaire sur base permanente;
- intégrer les idées nouvelles dans le domaine de l'ODL de façon à accroître la collaboration non seulement au niveau national et régional, mais aussi au niveau transnational;
- améliorer l'efficacité des politiques dans ce domaine moyennant l'acquisition de compétences de relief, l'échange d'opinions et l'apport d'experts.

Au séminaire ont participé 23 personnes, dont 6 représentants des Ministères de l'éducation nationaux, les Recteurs de 3 Universités européennes, 1 représentant d'une administration régionale, 13 conseillers et experts au niveau national et européen et un représentant de la Commission Européenne DG XXII.

3.1 SÉANCE D'OUVERTURE: OBJECTIFS DU SÉMINAIRE ET NOTIONS FONDAMENTALES DE L'ODL.

La première séance a débuté avec une introduction portant sur les concepts principaux concernant l'ODL et son rapport avec les technologies, en particulier avec les nouvelles technologies utilisées dans cette approche, par le Prof. Walter Kugemann (FIM-Psychologie, Université d'Erlangen, Allemagne).
Dans sa relation, Walter Kugemann a signalé la nécessité d'analyser, dans l'abstrait, le processus d'enseignement dans son complexe moyennant les nouvelles technologies et, donc, de concevoir à nouveau tout le système, aussi bien par rapport aux technologies qu'aux ressources humaines. Cette exigence dégage d'une réflexion de départ.
Le développement de la notion ODL et de la technologie sont liés d'une façon spécifique, parfois aussi délicate et problématique.
Alors que dans le passé les notions d'apprentissage et d'enseignement d'un côté et de technologies de l'autre ont évolué simultanément, dans les dernières décennies les technologies ont subi un processus d'accélération, en d'autres termes le cycle de vie de la technologie à fort diminué par rapport à celui concernant les notions pédagogiques et de l'apprentissage.
Afin de faire face à ces difficultés, on a essayé d'analyser les concepts d'ODL et de technologies d'un métaniveau relativement abstrait.

1. ***Ré-ingénierie***
   Les ingénieurs ont introduit le terme "ré-ingénierie" pour décrire le processus suivant lequel les systèmes existants sont analysés à un niveau plus abstrait, en différenciant leurs fonctions principales et en utilisant par la suite de nouvelles technologies qui n'existaient pas auparavant. Ils bénéficient d'une nouvelle combinaison entre solutions existantes et technologies. Par conséquent, les notions ODL et les technologies sont considérées principalement en vertu de leur caractère "révolutionnaire", et elles sont utilisées pour remplacer les anciennes solutions par des nouvelles solutions, dans un intervalle de temps assez court.
   La réalisation de ces nouvelles solutions est donc un processus toujours compliqué et, en partie, tourmenté puisqu'il est hérissé d'obstacles.

2. ***Technologies combinées***

Au départ l'enseignement et l'apprentissage n'impliquaient pas de manière essentielle le développement de technologie. Cela vaut aussi pour tous les secteurs où les technologies spécifiques sont utilisées aujourd'hui considérablement.

Ce genre de technologies «combinées» s'est affirmé avec l'invention de l'imprimerie (stimulée par la demande des milieux religieux) et il a progressé avec le développement des ordinateurs (pour l'usage militaire et de bureau), jusqu'à la télévision et aux CD-ROM (amusement).

Les technologies «typiques» de la classe aussi ont suivi ce principe: le tableau noir a commencé à être utilisé dans les bistrots pour écrire les commandes, le rétroprojecteur a été utilisé d'abord pour surveiller les combats militaires.

En conséquence les notions d'ODL sont censées exécuter un monitorage constant et attentif des développements technologiques afin d'identifier les développements qui sont disponibles économiquement et avec tous les éléments infrastructuraux nécessaires.

3. ***Systèmes d'apprentissage = présentation + communication (stockage)***

Système d'apprentissage	Stockage	Distribution	Modèle
Classe	Personne présente	Personne présente	Modèles typiques d'éducation traditionnelle
Education à distance,ODL	Papier ou moyens audio	Service postal, téléphone	Modèles typiques d'éducation «traditionnelle» à distance
ODL	Ecran	Réseaux numériques	Modèle de technologie fondé sur l'apprentissage

L'on peut décrire les systèmes d'apprentissage de façon assez simple en termes de combinaison entre fonctions de présentation (stockage inclus) et fonctions de communications.

Ainsi la classe, en tant que système d'apprentissage, peut être définie comme la combinaison entre une personne présente qui s'occupe de la présentation de la connaissance (enseignant), et l'assistance fournie -- mais qui n'est pas un remplacement -- par des instruments tels que le tableau noir, le rétroprojecteur, etc. La communication avec ceux qui apprennent est une partie importante, mais surtout un aspect informel qui, tout simplement, se réalise et qui n'est pas considéré comme une partie explicite du système.

Le terme ODL est utilisé pour une gamme considérable de systèmes d'apprentissage et il n'est pas caractéristique de technologies distinctes pour la présentation et la communication.

Les premiers systèmes fondés sur les technologies se servaient de transmissions radiophoniques, mais -- en raison aussi des limitations dans les services de communications -- ces systèmes utilisaient aussi des services de communication «à bas niveau» tels que le service postal et les rencontres en présence (face à face).

Dans le cas où il existe une capacité locale de stockage et de visualisation des données, l'écran devient alors l'instrument principal de la présentation, par l'intermédiaire de la télévision et des magnétoscopes ou des ordinateurs.

En général, on devrait définir ODL tous les systèmes d'apprentissage qui impliquent l'usage des composantes de relief d'une présentation et des instruments de communication.

4. ***Tendance vers l'intégration "horizontale"***

L'intégration horizontale n'est pas un élément nouveau du milieu pédagogique. La notion traditionnelle de classe est un exemple presque parfait de l'intégration horizontale entre présentation et communication. A la suite de la diffusion des premières technologies, les notions de ODL, aussi bien que l'enseignement à distance traditionnel ou «école par émission radio» ont été abandonnés.

Dans ce sens, la télématique a proposé à nouveau une ancienne caractéristique du système d'apprentissage et, de cette manière, le système ODL fondé sur la télématique apparaît assez plus compétitif par rapport à la notion toujours dominante de salle de classe.

5. ***L'institutionnalisation influencée par les technologies versus la déinstitutionnalisation***
   Les technologies de l'imprimerie du passé nécessitaient d'une quantité relativement élevée d'infrastructures. Les technologies de transmission montraient, dans le passé, des pareilles formes de dépendance et pour cela elles requéraient l'institutionnalisation.
   Dans les cas où les frais de transport dépendent des distances on aperçoit une limite à la dimension des institutions à l'intérieur d'un «rayon acceptable» de communication. Les organisations éducatives ont donc une extension géographique limitée.
   Les technologies télématiques ont introduit de nouveaux éléments. Les réseaux numériques, en raison de leur coût, ont un plus bas niveau de dépendance de la dimension distance et ils en sont même indépendants. En conséquence, l'extension d'une institution n'est plus limitée.
   Grâce à la microélectronique, la présentation peut être décentralisée à un coût réduit, et donc déinstitutionnalisée.
   Les notions ODL se situent ainsi au milieu des deux développements.
   Les effets envers les politiques ODL sont remarquables. Les régions, qui prennent habituellement des décisions dans le contexte éducatif, sont doublement interchangeables. Le niveau décisionnel glisse partiellement du niveau local au niveau régional, du niveau régional au niveau national, etc. En même temps le niveau décisionnel glisse en bas, par exemple de la division centrale pour la formation des entreprises multinationales aux responsables des unités commerciales, etc. Au cours de ce processus descendant, les décisions de politiques directes sont remplacées de plus en plus par des décisions qui tendent à créer un contexte et des conditions spécifiques ou par des décisions prises à un niveau inférieur ou par un seul individu.

6. ***Indépendance en termes de lieu et d'horaire***
   L'ODL offre à tous ceux qui étudient individuellement l'indépendance pour décider où, quand et pendant combien de temps ils veulent étudier. L'effet principal est la diminution de la nécessité d'apprendre en tant qu'activité exclusive.
   A l'égard des politiques ODL, la conséquence paraît être assez remarquable: les décisions concernant les éléments et les fonctions de l'ODL tendent à se déplacer jusqu'à rejoindre des politiques plus générales dans d'autres secteur (par exemple des politiques liées au marché du travail, à la politique industrielle, etc.). Les conséquences à long terme de cette tendance représentent un aspect intéressant de débat et d'enquête.

7. ***Technologies de soutien pour le contrôle des élèves.***
   L'ODL est orienté vers la réalisation d'objectifs: cela implique le passage d'un paradigme fondé sur l'enseignement à un autre fondé sur l'apprentissage et, donc, à l'amélioration du contrôle des élèves sur le processus.
   On peut donc remarquer le rôle clé des politiques ODL en tant qu'influence agissant sur le développement technologique; cela veut dire aussi identifier et supporter résolument le potentiel des technologies par rapport aux décisions individuelles, afin d'exploiter son potentiel. Ce sujet aussi requiert une réflexion approfondie.

8. ***Milieux d'apprentissages en tant que milieux (télé) coopératifs (modérément) spécifiques.***
   Le processus qui pousse l'ODL vers l'intégration dans d'autres milieux et tâches intègre de plus en plus les technologies de l'ODL avec les technologies génériques des activités fondées sur la télématique. On pourrait décrire la gestion interactive des informations exactement de la même façon que les systèmes d'apprentissage (susmentionnés): une

combinaison entre présentation, stockage et communication. Etant fondée sur les mêmes notions de coûts et de facilité d'utilisation, dans l'avenir la tendance à l'«intégration horizontale» sera généralisée à tous les milieux d'apprentissage.
En raison des bénéfices des économies d'échelle qui caractérisent l'application standardisée sur un grand rayon (matériel et logiciel), les technologies pour l'apprentissage seront bientôt les mêmes pour toutes les applications.
Quelques exemples: étant donné qu'apprendre un sujet spécifique est d'habitude une activité exclusive, alors que tous les usages routiniers des processus sont récurrents, les milieux télé-coopératifs pour l'apprentissage devraient encourager un apprentissage plus rapide et un milieu de travail plus aimable. Etant donné que le cycle vital de la qualification acquise au cours d'un processus d'apprentissage est, dans la plupart des cas, plus étendu que le cycle vital des technologies matérielles et logicielles, les technologies employées pour l'apprentissage devraient être aussi avancées que possible, économiquement accessibles et communes, afin de pourvoir les perspectives les meilleures à l'égard de la suite de chaque parcours de développement.
Les politiques ODL, dans leur rapport avec les technologies, devraient donc être uniquement des politiques d'application et de réalisation et non pas de développement.
Le débat général qui a fait suite à la relation du Prof. Kugemann a concentré son attention principalement sur une série de questions-clé, en soulignant en particulier la dichotomie étroite qui existe entre l'information et la communication.
On a souligné aussi l'émergence d'un modèle d'apprentissage capable d'améliorer la qualité de l'apprentissage et de suivre le rythme d'un monde qui change et qui a toujours fait face à une accumulation historique de moyens et d'innovations et du processus conséquent de distribution pour des usages différents. Eric Barchechath en a donné un exemple: l'invention de la bicyclette ne signifie pas que les gens aient arrêté de marcher, car elles se servent bien du vélo, mais elles continuent aussi à marcher, etc.
En d'autres termes, on a assisté à un processus d'«addition» des instruments et des méthodes plutôt qu'à un simple «remplacement», et il est assez probable qu'un processus pareil soit en train de se réaliser, où va bien se réaliser, dans le domaine des technologies ODL.

3.2 LE MARCHÉ ET LES POLITIQUES ODL EN EUROPE

L'apport du professeur Rocha Trinidade (Recteur de l'Université Aberta, Président du Conseil national pour l'Education à distance), portait sur le marché en général, et en particulier sur le marché de l'ODL.
Un marché est une entité qui, en général, est caractérisée par stabilité, structure et organisation.
En outre, les acteurs du marché sont reconnaissables: les fournisseurs sont en mesure d'identifier les usagers, ce qui fait que les règles peuvent être adoptées moyennant le consensus mutuel de façon à ce que les deux parties puissent être satisfaites par leurs transactions.
Un certain nombre de différences sont clairement manifestes lorsqu'on parle d'innovations impliquant l'essor de nouveaux types de marchés. C'est le cas, par exemple, de l'ODL.
Tout d'abord il y a le problème concernant l'identification des acteurs: les fournisseurs sont organisés entre eux, ce qui amène à une offre spontanée formulée suivant des exigences fort différentes et non pas pour des demandes spécifiques.
En même temps, il est vrai que la demande n'est pas suffisamment organisée.
Deuxièmement, le contrôle qualité dépend de la bonne volonté de chaque acteur, et la sauvegarde du consommateur est pratiquement inexistante.
Troisièmement, les transactions ont lieu spontanément, ce qui signifie que le marché se trouve au premier stade de développement et fort loin d'être stable, structuré et organisé.

Le Professeur Rocha Trinidade a signalé aussi le risque de la présence de concurrence sur le marché découlant d'entités ou d'organisations qui ne sont pas directement concernées par l'ODL: par exemple, aux Etats Unis on a l'habitude d'obtenir des autorisations pour n'importe quelle chose (télé, satellite, amusement, téléventes, communications, informations, etc.). Pourquoi donc ne devraient-ils pas demander une autorisation pour développer et offrir une offre educative

En même temps ces sociétés américaines pourraient devenir des leaders dans le domaine de l'OLD en Europe.

Pour toutes ces raisons, l'Europe devrait prendre ce risque et développer rapidement une stratégie afin de ne pas abandonner le marché et d'anticiper l'«invasion» de la part de fournisseurs étrangers (afin d'échapper à ce qui s'est passé dans l'industrie du cinéma).

La possibilité de développer un nouveau type de marché est toutefois existante.

Lorsque l'on considère les politiques de l'ODL en Europe, on devrait tenir compte de deux différents groupes de destinataires: les personnes à l'intérieur de l'université et tous ceux qui sont impliqués dans le domaine de l'éducation/formation.

A partir de ces considérations, il y a un certain nombre d'actions qui pourraient être réalisées en Europe au niveau décisionnel:

- accroître l'efficacité de la bureaucratie;
- prévenir l'exclusion qui découle de la diffusion de la technologie;
- focaliser l'attention sur la formation afin de prévenir et d'affronter le chômage;
- créer une conscience publique face à la valeur adjointe de la construction de l'Europe;
- investir dans la recherche sur les processus d'apprentissage.

L'importance de tous ces aspects a été explicitée au cours du débat général, suivi au discours du Prof. Rocha Trinidade.

Tour d'abord, les acteurs impliqués dans le marché de l'ODL ne sont pas très nombreux, et en même temps il existe une confusion de rôles, avec les producteurs qui opèrent en tant que formateurs, etc.

Afin d'éviter ce problème, il faudrait élaborer des stratégies communes et un partenariat solide.

Deuxièmement, la nécessité de réaliser des investissements dans les processus d'apprentissage est fondamentale pendant cette phase, en raison de la connaissance insuffisante du sujet, afin d'améliorer l'efficacité du processus même et des produits et des approches ODL.

Troisièmement, l'ODL pourrait se transformer en un boomerang face à la formation de personnes ayant des back-ground culturelles assez différentes -- une explicitation des problèmes du développement de la société de l'information -- en entraînant la difficulté liée à l'organisation de la connaissance des citoyens, c'est à dire le débat sur la démocratisation de l'apprentissage et de la connaissance.

3.2.1 Une perspective universitaire

Le Professeur Kenneth Edwards (CRE, Vice Chancelier de l'Université de Leicester) a présenté une étude sur l'approche à l'ODL dans les universités, réalisée par le CRE dans le cadre de SOCRATES ODL, dont les principaux sujets, les résultats, les stratégies et les actions prévues pour l'avenir sont indiqués par la suite.

Stratégies universitaires pour l'apprentissage à distance

- La mission fondamentale de l'Université:
  - ◊ la connaissance: sa création et son entretien
  - ◊ l'éducation: propagation de la connaissance (professeurs en tant que dépositaires du savoir)
- Les nouvelles technologies.
  - ◊ manipulation de l'information
  - ◊ communication de l'information

- ◊ multimédia
- ♦ Connaissance:
  - ◊ l'information
  - ◊ la compréhension

Le projet CRE pour l'éducation à distance (volet du projet "Restructuration de l'Université")

Sur la base de ces fondements le CRE a essayé de réfléchir sur la stratégie de réplique des Université Européennes aux défis concomitants représentés par:

- ♦ la transition à l'éducation supérieure de masse
- ♦ le rôle de la recherche
- ♦ les nouvelles technologies

Ces questions ont été l'inspiration pour l'organisation de deux séminaires en 11 Universités, qui ont vu la participation d'un cadre, d'un expert de l'ODL et d'un professeur de chaque université.

Les objectifs des séminaires: comparer les expériences et comprendre la portée de ces expériences dans les stratégies universitaires.

Les découvertes et les conclusions ont été significatives dans la perspective du projet.

Résultats:

- ♦ Un grand rayon d'expériences existantes
- ♦ L'enseignement partagé avec d'autres universités
- ♦ Amplification des exigences d'accès du point de vue géographique et social
- ♦ Concurrence globale (nécessité de s'insérer dans le marché international avec plusieurs autres universités; l'ODL pourrait être un outil valable pour étendre le marché)
- ♦ La plupart des développements actuels dans l'enseignement sont gouvernés par la technologie
- ♦ L'efficacité pédagogique de l'ODL est tenue en compte a priori plutôt qu'a posteriori
- ♦ Le potentiel considérable de l'ODL pour les étudiants résidentiels
- ♦ Peu d'universités intégrant l'ODL dans les stratégies institutionnelles.

Conclusions

- ♦ Les coûts sont généralement sous-estimés
- ♦ Les coûts de départ impliquent la formation
- ♦ Les coûts récurrents sont liés à la mise à jour des équipements et à la formation (reconversion) des enseignants
- ♦ Les attitudes sont généralement sceptiques, voire hostiles
- ♦ L'ODL en tant que potentiel de valorisation pour toutes les méthodologies pour l'enseignement et l'apprentissage
- ♦ L'ODL doit être une composante des stratégies institutionnelles
- ♦ L'exigence de tenir compte de la nature des groupes d'étudiants:
  - ◊ au départ, post-diplôme
  - ◊ au départ, adulte
  - ◊ à la rentrée
    - – évolution professionnelle
    - – apprentissage au cours de toute la vie

L'étude a dégagé une question conséquente et prioritaire: comment aider les universités à coopérer.

On a identifié un certain nombre de solutions possibles et d'actions à accomplir:

- ♦ partage des expériences
- ♦ attitude à la reflexion stratégique
- ♦ collaborations entre les universités et les autres agences.

Le débat général qui a fait suite au discours a focalisé l'attention sur le type d'ODL le plus efficace pour le milieu universitaire, une sorte d'enseignement sur demande, car il est nécessaire d'identifier de nouvelles méthodologies d'apprentissage sans se borner au besoin de s'insérer dans le marché ou de l'agrandir. Cela signifie qu'il faut transformer complètement le système éducatif.
En ce processus, le rôle du tutor en tant que profil professionnel est fondamental, aussi bien que la création de bibliothèques ad hoc et de manières pour stimuler la créativité et les apports des enseignants.
Par exemple en France ce processus a déjà été entamé moyennant la réévaluation de la pédagogie et la création de travail par la réalisation de l'ODL.

3.3 TENDANCES RÉCENTES DANS LES POLITIQUES ODL: LE CONTEXTE DE L'U.E.

M.me Corinne Hemant (Commission Européenne, DG XXII), a présenté les actions de l'Union Européenne qui ont été réalisées par les différentes Directions Générales:

- SOCRATES et LEONARDO DA VINCI par la DG XXII
- Fonds Social Européen et Fonds Européens pour le Développement Régional par la DG V et la DG XVI
- MEDIA 2 et INFO 2000 par la DG X et la DG XIII
- ESPRIT par la DG III
- TELEMATICS et T.S.E.R. par la DG XII et la DG XIII

En particulier, la DG XXII est en train de réaliser un grand nombre d'initiatives et d'actions liées et focalisées sur l'ODL comme:

- SOCRATES et LEONARDO DA VINCI
- la résolution du Conseil sur le logiciel pédagogique et multimédia
- l'initiative: "apprentissage dans la société de l'information"
  - ◊ interconnexion des écoles
  - ◊ services éducatifs "multiservices"
- appels conjoints pour des Propositions liées à la Task Force sur le Système Logiciel Multimédia

En outre, l'ODL représente un élément prioritaire non seulement dans SOCRATES ODL, mais aussi dans d'autres volets de SOCRATES, tels que ERASMUS, COMENIUS, LINGUA, Education des Adultes, EURYDICE.
Il est important de remarquer que l'ODL commence à être intégré dans plusieurs programmes sur l'éducation et la formation, et en particulier il existe un sous-programme particulier consacré à l'ODL.
Les principaux objectifs réels de SOCRATES ODL sont:

- la promotion de l'ODL, y compris l'intégration de nouvelles technologies dans l'éducation traditionnelle;
- la coopération parmi les centres de ressources, les universités, les universités ouvertes et les écoles;
- le développement de modèles pour la formation des enseignants et visant à l'intégration de Nouvelles Technologies de l'Information dans le processus d'apprentissage;
- le développement d'une base de données pour l'éducation.

Les politiques entreprises par la Commission de l'Union Européenne sont intéressantes pour des raisons multiples; en particulier il faut souligner la tendance à l'innovation dans les méthodes d'apprentissage, dans les modalités de coopération e dans la recherche de nouveaux modèles aussi bien pour l'apprentissage que pour l'intégration des technologies de l'Information, qui sont liées à la recherche.

Cet approche, bien qu'elle soit morcelée en plusieurs DG, vise à la création d'un langage commun pour l'innovation et les systèmes éducatifs et formatifs, ainsi qu'à la consolidation de la coopération au niveau européen.

3.4 ORIENTATION ET DÉFINITION DES POLITIQUES

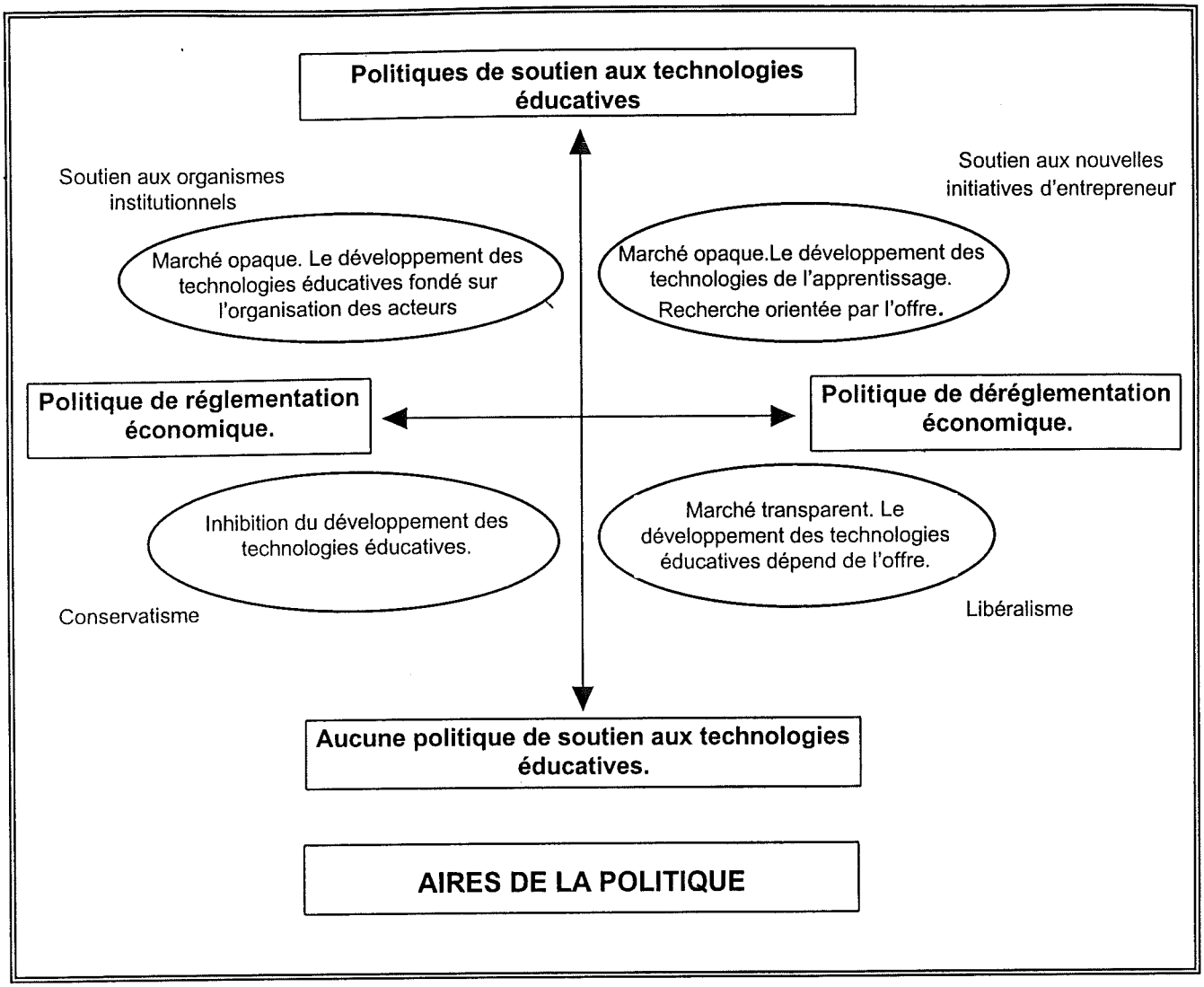
L'apport du Dott. Claudio Dondi (SCIENTER), qui a ouvert la séance, visait à reconstruire les différentes orientations et l'évolution des politiques européennes et nationales. Il faut bien souligner quelques unes des notions fondamentales de l'intervention:

1. L'ODL en tant que vecteur de l'innovation des systèmes éducatifs et de formation. Dans le passé la Formation à Distance (DT) et l'ODL étaient strictement liés moyennant la mise en place d'une offre de formation/apprentissage conçue pour des catégories désavantagées d'usagers.
   Actuellement l'adoption de nouvelles technologies de l'apprentissage et de l'ODL est liée surtout au but d'améliorer la qualité des systèmes, grâce à la ré-ingegnerie du système en partant de l'élève, de ses priorités et de ses exigences.

2. La prolifération des initiatives à un niveau régional, national et européen complique l'identification des orientations principales. Il est toutefois possible d'identifier un certain nombre de tendances communes:
   a) la tendance à passer des politiques de soutien à l'offre d'ODL aux politiques de soutien aux projets-pilote «orienté vers la demande» et a mesures visant à améliorer les mécanismes du marché (systèmes d'information, de certification, centres ressources, etc.). De fait on commence à ressentir le besoin d'un marché davantage structuré, d'une définition des règles qui puisse en assurer le bon fonctionnement, la discipline et la transparence. En particulier, les problèmes de déficit dans la communication entre les acteurs concernés apparaissent plus importants au niveau national qu'au niveau européen.
   b) a tendance concrète vers l'intégration des politiques: pendant les dix dernières années il a été possible d'assister, outre les politiques spécifiquement adressées à la promotion des Technologies de l'Apprentissage et de l'ODL, à la diffusion de politiques destinées à l'innovation des systèmes éducatifs et de formation, à la croissance de l' emploi et au développement socio-économique régional, ce qui a indirectement mené à l'adoption de l'ODL et des technologies de l'apprentissage dans le domaine de l'éducation (l'ODL est généralement une composante intégrée). En particulier, l'adoption de l'ODL peut contribuer à:
      - passer d'un paradigme fondé sur l'enseignement à un autre basé sur l'apprentissage;
      - passer des systèmes de certification fondés sur les qualification à un système basé sur les compétences de concert avec l'adoption d'une approche modulaire;
      - dépasser les barrières en entrée en relation à l'offre d'apprentissage;
      - créer un réseau au niveau européen;
      - s'acheminer vers la société de l'Information;
      - favoriser le processus d'internationalisation de l'information;
      - appuyer un parcours de croissance culturelle et professionnelle au cours de toute la vie (lifelong learning).

L'apport suivant, du Dott. Eric Barchechath, visait à fournir une lecture et un classement des politiques et des programmes dans le domaine de l'ODL.

Les quatre genres de politiques gouvernementales peuvent être représentés sur un système d'axes cartésiens, comme on le voit par la suite:

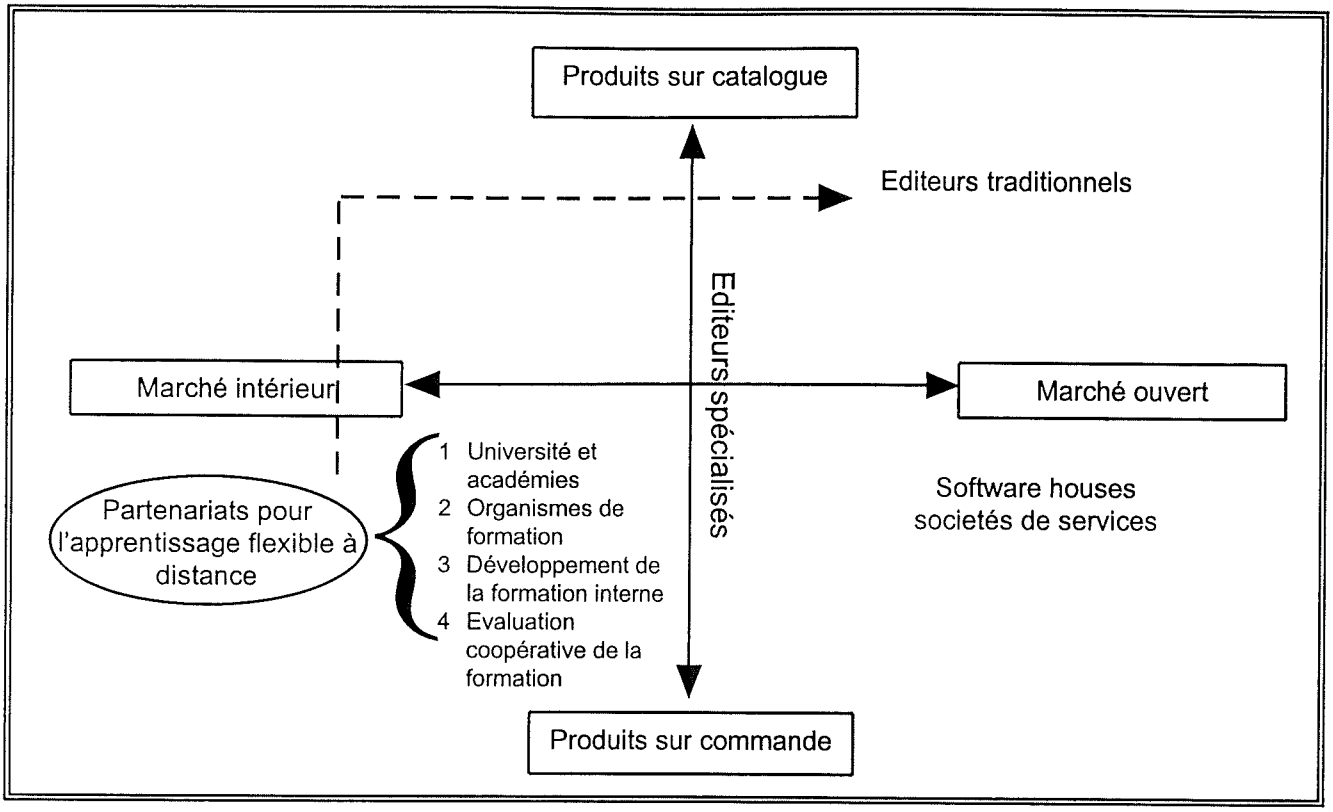


Les quatre espaces définis par les axes identifient:

- dans le IV quadrant on retrouve les politiques de soutien aux acteurs institutionnels, aux grandes organisations (par exemple en France AFPA et CNAM). On peut le considérer une section où la politique conduit le développement qui est articulé sur des organismes «vassaux»;
- dans le I quadrant on retrouve une politique visant à la «création de nouvelles entreprises», liée aux potentiels qui sont en relation avec le développement du marché des produits et des services;
- dans le II quadrant, au carrefour entre déréglementation et absence de politiques de soutien au développement de l'ODL, on trouve une section gouvernée par les lois du marché et par la demande d'ODL et de technologies éducatives.
- dans le quadrant caractérisé par l'absence de politiques de soutien et de politiques économiques sur la réglementation, on trouve une section où l'ODL et les technologies éducatives sont développées dans un contexte hostile, marqué par des barrières à l'innovation.

Le manque de connaissances approfondies et structurées concernant la rentabilité, les coûts-efficacité, la demande et l'offre, l'absence de capitalisation des expériences réalisées engendrent une situation où, aussi bien au niveau national qu'européen, les décisions politiques constituent des «actes de foi» plutôt que des résultats sur la conscience des coûts et

des bénéfices, des points faibles et des points de force, tant pour les individus que pour la collectivité.
En dernier lieu les stratégies et les attitudes (actuelles et potentielles) des acteurs peuvent être représentées moyennant un deuxième système d'axes cartésiens.



Les acteurs situés dans le III quadrant, caractérisé par la Production sur commande e par le Marché intérieur, peuvent être réuni par le terme «Partenariat pour l'apprentissage flexible et à distance», et il est possible d'affirmer qu'un marché mûr et structuré devrait être défini par leur évolution: tout d'abord, un déplacement au quadrant supérieur, marqué par une production «sur catalogue» et toujours dans un contexte protégé; en suite un déplacement vers le I quadrant, où la production est adressée au marché «ouvert» et, donc, où le fondement est la demande réelle du marché.
Les apports de M. Dondi et M. Barchechath ont stimulé un débat intéressant et quelques précisions. D'abord, le processus décrit dans le dernier diagramme, développé par Barchechath, devrait intégrer les problèmes reliés à la traduction et à l'adaptation culturelle du matériel ODL.
L'hétérogénéité, la spécificité des contenus et la demande pour l'adaptation au contexte de travail et d'apprentissage pourraient poser quelques limites aux éventuelles économies d'échelle.
De plus, un même contenu dans des contextes différents implique des styles et des modèles d'apprentissage différents.
En ce qui concerne la dimension du marché, on a souligné à plusieurs reprises le manque de compétences d'un seul acteur et, donc, l'importance de promouvoir de nouvelles alliances.
Le rôle et l'apport des sociétés de télécommunications ne devrait pas être sous-estimé, compte tenu du relief de l'aspect «prix/tarifs».
On a aussi souligné le risque d'auto-référence et de la crainte à l'égard de l'absence d'un contrôle sur la formation: au contraire l'ODL représente un vecteur fondamental pour l'innovation des systèmes. En particulier, l'ODL constitue un outil pour consolider la coopération entre formateurs et ingénieurs pédagogiques et les entreprises et les individus (afin de réaliser la formation avec les entreprises et non pas pour les entreprises).

L'apport de Walter Kugemann a focalisé l'attention sur l'écart existant entre les attentes par rapport à la diffusion de l'ODL et à sa diffusion actuelle.
L'intérêt suscité par cet apport réside dans l'approche psychologique consacrée à l'interprétation de l'«échec»
Le premier point qui a été mis en relief porte sur le processus de développement des notions de la part des «policy makers» dans le domaine de l'ODL. S'il est vrai que les notions évoluent à partir de l'expérience, on ne recense pas beaucoup de «policy makers» qui peuvent compter sur une expérience réelle pratique.
Si l'on considère les policy makers comme ceux qui influencent le processus décisionnel, et si l'on tient compte des politiques qui ne s'adressent pas spécifiquement à l'ODL (développement technologique, systèmes d'innovation, etc.) cette donnée est renforcée.
Il y a un manque d'expérience et de conscience du fait qu'une approche ODL implique aussi la ré-ingénierie du système de formation et l'engagement des acteurs dans le processus, en consacrant une attention particulière aux élèves.
Le Prof. Kugemann a mis l'accent aussi sur un mécanisme en évolution appelé «experts de l'écoute», qui consent l'activation d'un réseau de conseil et d'apprentissage permanents en matière d'ODL.
Il est toutefois essentiel d'assurer un équilibre entre les différents aspects, eux aussi porteurs d'intérêts spécifiques.
Par rapport aux scénarios d'évolution possibles, le Prof. Kugemann a proposé deux choix: des nouvelles solutions aux nouveaux problèmes ou bien des modalités alternatives de solution aux problèmes connus. En traçant la carte des acteurs qui sont en mesure d'influencer le processus décisionnel concernant l'ODL et les relatifs intérêts et motivations, on introduit des notions telles que «gagnants», «vaincus» et «motivations asymétriques».
Les structures motivationnelles des acteurs sont différentes et le groupe des «vaincus» est généralement représenté en tant que suffisamment homogène et hostile à l'égard du changement.
Les motivations des «vainqueurs» apparaissent différenciées. De plus, ils sont rarement conscients des bénéfices qui peuvent découler de l'adoption de l'ODL (voilà leur point faible) et il ne sont pas suffisamment mis au jour pour défendre leurs intérêts.
Un élément remarquable: les policy makers devraient se rendre conscients de leurs capacité d'analyse du contexte et des dynamiques correspondantes des intérêts des acteurs et des alliances qui les produisent.
En ce qui concerne la dimension conceptuelle et méthodologique, le Prof. Kugemann a souligné que les résultats des Programmes de l'Union Européenne sont constitués par la diffusion d'un modèle d'analyse commun.
Un obstacle au processus de transfert est relié au fait que les policy makers semblent agir d'instinct, sans expliciter leurs motivations.
La carte des acteurs consentirait une action d'ingénierie pédagogique et de mise en oeuvre des politiques ODL plus consciente.
Les stratégies d'achèvement devraient être fondées davantage sur l'augmentation du nombre des vainqueurs, plutôt que sur l'énergie et sur l'engagement des vainqueurs potentiels.
La stratégie devrait donc être focalisée sur la recherche des «vainqueurs cachés» qui ne sont pas conscients des bénéfices possibles liés à l'adoption de l'ODL. La création d'un processus de communication et d'échange entre les différents groupes de vainqueurs potentiels est un élément gagnant d'une stratégie de promotion de l'ODL.
L'analyse psychologique des processus décisionnels est vue comme un apport valable à une analyse multidisciplinaire. Malgré cela, l'analyse psychologique doit être l'une des dimensions multiples.
Le débat qui suit à permis de souligner quelques aspects.
La terminologie ODL: il s'agit d'une terminologie héritée par les documents européens (en particulier du Programme Delta) qui présente encore quelques ambiguïtés. Les technologies

de l'information et de la communication (ICT) représentent l'une des composantes du système, mais en même temps elles ne couvrent pas toutes les dimensions non-technologiques de l'innovation que l'ODL implique.

En ce qui concerne la question de la «légitimité» d'une politique ODL spécifique, le débat, aussi bien que l'enquête propédeutique qui a été réalisée pour le séminaire, ont souligné qu'il n'est pas possible de donner une réponse définitive, mais que l'on doit plutôt tenir compte de la période historique, du type de problème (accès à l'éducation et à la formation; sauvegarde des usagers; innovation technologique; réorganisation du système éducatif et de formation).

Réfléchir sur les politiques ODL signifie prendre en compte les différences historiques et culturelles, ainsi que les modèles décisionnels dans les différents pays. Dans la phase d'essor il pourrait être utile d'entreprendre une politique ODL spécifique, alors que successivement il pourrait y avoir une tendance à l'intégrer à d'autres politiques.

Au fond du débat il y a évidemment le problème de la «responsabilité sociale». Face au processus d'innovation et à la diffusion des ICT demeure le problème du contrôle social: voilà une grande opportunité. En Allemagne la conscience et la sensibilité à l'égard du contrôle de la science et de la technologie sont extrêmement profondes, alors qu'elles sont presque absentes dans d'autres pays.

Enfin, l'adoption d'une approche ODL devrait être considérée comme une opportunité importante afin de renouveler les systèmes éducatifs et de formation et pour mieux répondre aux exigences des usagers.

Le débat, qui s'est déroulé à l'intérieur de plusieurs groupes de travail formés dans le cadre du séminaire, a confirmé la thèse qui était déjà en train d'apparaître. Par la suite l'on indique quelques uns des aspects les plus intéressants présentés au débat.

1. Un élément de cyclicité: on capte de façon cyclique une tendance à répéter les mêmes fautes que dans le passé, à parcourir les mêmes chemins (par exemple, les erreurs, les débats et les problèmes liés à l'utilisation d'Internet évoquent ce qui avait été déjà dit et fait dans le passé).
2. Un phénomène de transfert ou d'«emprunt» conscients des politiques des autres pays.
3. L'existence de trois types d'encouragement pour introduire l'ODL: technologique, économique et lié à la solution des problèmes de la qualité.

En ce qui concerne les éventuels obstacles à la diffusion de l'ODL, on a mis l'accent sur les aspects suivants:

1. les procédés, les rôles et les paramètres administratifs, qui demeurent rigides et non compatibles avec les caractéristiques des systèmes ouverts et souples;
2. la prédominance d'actions du haut vers le bas (top-down);
3. la qualité des produits et l'incapacité de montrer leur valeur pédagogique fondamentale;
4. l'absence d'habitudes dans l'utilisation des ressources pédagogiques de la part des enseignants;
5. les barrières liées à l'organisation des structures éducatives et de formation;
6. les contraintes juridiques et administratives;
7. la grande déception à l'égard des technologies éducatives et des attitudes négatives;
8. la crise socioéconomique qui ne concède pas une deuxième chance: l'issue positive de la première action est indispensable.

La notion de lobbying: la capacité de créer des réseaux de "vainqueurs" potentiels, de les mobiliser et d'entamer une activité de lobbying est un aspect fondamental dans le processus décisionnel des politiques. Grâce au résultat du lobbying un groupe d'acteurs est à même d'orienter les décisions politiques et les stratégies dans le domaine de l'ODL et, donc, de contribuer au processus d'innovation.

Enfin, la coopération verticale et horizontale et les réseaux inter-organisationnels ont reçu des avis opposés: ils peuvent être un instrument important et déclencher le changement et

l'innovation, mais ils peuvent aussi constituer des façons de s'opposer au changement, pour défendre des intérêts déjà affirmés.

3.5 RÉALISATION DES POLITIQUES

Politiques, mesures, initiatives. Le processus décisionnel et les parties concernées. La comparaison des mesures alternatives à partir de points de vue différents.

L'objet de la séance était, d'un côté, les expériences de l'Emilia-Romagna (présentées par Marie Françoise Delatour) et de l'autre côté celles des cinq pays nordiques, presentée par Ulf Vasström (projet IDUM - Conseil des Ministres nordiques).

Les politiques de l'ODL en Emilia-Romagna s'inscrivent dans un contexte marqué par un bas niveau de chômage, par des tendances massives à l'innovation des PME et par un système de formation qui prévoit des centres de formation petits et souples, sans enseignants et avec peu de ressources humaines internes consacrées à la gestion, à l'administration, à la définition des projets, à la coordination et au soutien (tutoring).

Les phases principales du processus d'expansion de l'ODL:

'83-'84 Démarrage de la réflexion sur l'ODL

'87 Congrès de sensibilisation et d'échange d'expériences parmi les experts régionaux et européens (surtout du Royaume Uni).

'88-'89 Première expérience sur l'ODL adressée à 125 entrepreneurs du secteur agricole de la région des Apennins. Il s'agit d'un projet réalisé dans le cadre des PME, sans utiliser des technologies sophistiquées.

'88-'91 «Longue gestation»: un certain nombre de sujets innovateurs ont présenté des propositions et des expériences en dehors du contexte institutionnel (par exemple, DELTA, COMETT, etc.). Pendant cette période on a effectué une première réflexion sur les critères de qualité des produits ODL. Jusqu'en 1992 on a assisté à une évolution cachée, sans aucun soutien en termes de services et marquée par une production consistante de produit pédagogique.

'92 Naissance officielle («la sortie du bois») et début de la réglementation des systèmes FAD-ODL, non pas dans une optique disjointe de la formation professionnelle mais en tant que chapitre et élément ordinaire. Dans cette phase la pleine reconnaissance était encore loine, mais la réglementation des aspects administratifs et financiers avait déjà été amorcée (normes concernant la présence et la participation aux actions de Formation à Distance, avec une durée diversifiée et suivant des parcours personnalisés, reconnaissance du rôle du tutor grâce à un statut spécifique).

'94-'96 Normalité: période caractérisée par une solide évolution interne du système régional. L'ODL est intégré en tant qu'élément ordinaire et non pas comme une alternative au système. Pendant cette période on a assisté au développement d'une confrontation avec les partenaires sociaux sur ces questions afin de définir des lignes directrices. C'était le début de la réalisation d'un modèle mixte, fondé sur l'intégration de moments de formation dans la classe et de moments d'apprentissage individuel.

Les instruments visant à conférer de la visibilité au système sont:

a) 1. CERFAD. Commission mixte pour la certification de qualité des produits ODL, coordonnée par l'Emilia-Romagna (avec le soutien de SCIENTER) et composée par des experts nationaux.

2. Recensement de tous les produits FAD-ODL développés grâce au soutien financier publique et analyse des produits sur la base des critères de qualité. Le catalogue des produits certifiés devrait contribuer à la diffusion des produits (gratuitement ou à un prix bas).

3. Manuel sur les critères de qualité pour le matériel ODL.

b) Création d'un Centre de Ressources pour la diffusion des produits certifiés. Le centre a été créé par SINFORM (l'association des principaux centres de formation conventionnés en Emilia-Romagna). Il comprend environ 50 centres régionaux de formation professionnelle et il devrait constituer une sorte de bibliothèque de multimédia et de l'ODL. On a créé un réseau de «classes d'ordinateurs»: l'objectif consiste à disposer d'une classe dans tous les centres de la région. Trois classes d'informatique dans la région montagnarde vont intégrer le système régional.
Il est intéressant de remarquer que la certification n'est pas effectuée par les éditeurs, mais par des organismes indépendants, et que le réseau est formé par des producteurs et par des usagers des produits.
La région supporte aussi la production du matériel d'apprentissage moyennant différentes sources de financement (Fonds Social Européens, ADAPT) avec une approche de type bottom-up (du bas vers le haut).

'97-'99 Phase de développement. Les lignes directrices vont être:
1) formation des formateurs afin de soutenir le développement de l'ODL.
2) achèvement des connexions télématiques des centres de formation professionnelle et des centres de ressources.
3) développement de toutes les modalités de télétravail et de vidéoconférence.

L'accord signé par le gouvernement national avec les partenaires sociaux pour l'augmentation de la cotisation obligatoire sur le montant des salaires, destinée à la formation continue, va contribuer à la diffusion de l'ODL dans les PME.
En ce qui concerne les éléments gagnants et les points faibles, parmi les plus importants on énumère:

1) la stabilité du gouvernement régional et de l'équipe de travail (15 années). Cette stabilité a permis de développer une approche systématique en évitant les interruptions dues aux changements politiques.
2) la présence d'organisations et de conseils «pionniers» qui ont constitué un élément de promotion et de stimulation extrêmement important.
3) la nature et l'attitude face à l'innovation des PME dans la région.
4) l'incertitude par rapport au soutien financier régional: le financement aux projets plutôt qu'aux infrastructures a assuré le développement de compétences liées à l'analyse de la demande de formation provenant des PME et de compétences relatives à la définition des projets. Cela a poussé les centres à repérer toutes les sources possibles de financement.
5) la prédisposition à l'action concertée et au contrôle social des acteurs et des collectivités locales en matière de formation.

Parmi les difficultés on peut déceler:

1. l'incertitude du soutien financier, pouvant avoir un effet négatif. La recherche incessante de fonds afin de justifier l'existence d'une organisation pourrait avoir des conséquences négatives sur la qualité didactique;
2. l'«isolement» de l'Emilia-Romagna dans le contexte italien global et la conséquente impossibilité d'être un groupe de pression pour le ministère afin de surmonter les problèmes liés à l'adoption de l'ODL;
3. les difficultés relatives au contrôle juridique et administratif sur les activités concernant l'ODL. On aperçoit l'absence de modalités et d'instruments, en particulier par rapport au contrôle sur les temps d'étude individuelle. L'utilisation de l'Intranet pourrait résoudre en partie ce problème;
4. l'absence de standards européens en matière de qualité des produits ODL;
5. la vente de produits réalisés complètement ou partiellement grâce aux financements publiques. L'impossibilité de réinvestir le produit dans la mise au jour ou dans la production

nouvelle représente un obstacle de relief. La synergie entre les organisations publiques et particulières mène à la réalisation de produits de qualité plus élevée par rapport à ceux réalisés entièrement dans le domaine particulier.

L'élément essentiel est représenté par l'opportunité que les ingénieurs de formation/formateurs ont de travailler ensemble (PME et individus) afin de répondre véritablement à la demande de formation.
La priorité semble être celle de formaliser et capitaliser le savoir faire des entreprises, plutôt que de transférer les résultats de la recherche aux PME.
De ce point de vue, le formateur devient un conseiller à même d'intervenir sur les problèmes et capable de les résoudre. Cela implique une compétence non seulement des méthodes, mais aussi des contenus de la formation. La principale impulsion vers l'introduction de l'ODL est constituée par l'exigence d'innover et d'améliorer la flexibilité du système de formation régional.
Face à l'aspect du lobbying, qui a été débattu lors de la deuxième séance, M. F. Delatour a signalé l'existence d'un lobby régional d'experts qui est extrêmement déterminé et qui a eu un rôle significatif en mettant l'accent sur les avantages et les opportunités de l'offre en ODL.
Une action de pression intelligente et efficace implique l'existence d'un récepteur sensible au niveau de la direction des services, capable d'établir les alliances appropriées pour le contexte et de sensibiliser les «ministres des régions» qui se sont succédés au cours du temps.
Au niveau pédagogique (projet didactique) la région a favorisé un modèle mixte intégrant la formation en salle de classe et l'auto-formation.
Les modules en l'auto-formation sont généralement courts et largement interactifs. L'approche ODL est utilisée principalement pour la formation continue et l'élément gagnant, en termes de qualité, est l'adéquation au contexte de travail.
La deuxième expérience d'introduction/réalisation de l'ODL est particulièrement composite.
IDUN, Technologie de l'Information et de la Didactique dans l'Éducation (Information Technology and Didactics in Education) est un projet de coopération nordique institué par le Conseil des Ministres Nordique et auquel participent cinq pays du nord de l'Europe: Danemark, Finlande, Suède, Norvège et Islande.
Le projet vise à coordonner les actions des gouvernements nordiques et à soutenir leur coopération dans le domaine de l'éducation primaire et secondaire, dans l'éducation supérieure, dans l'éducation pour les adultes, dans la formation pour les enseignants et dans l'éducation pour le tertiaire. Cet initiative remonte aux années 80, marquées par l'introduction systématique des Ordinateurs dans les écoles.
Ainsi, il n'y a pas de politiques globales et communes pour l'ODL, mais une coordination et un échange respectueux des différences culturelles, économiques et sociales.
Les principaux domaines d'intérêt du Projet sont:

- le dialogue entre les pays en matière d'ICT et dans le domaine de l'éducation;
- la mise en place des résultats des projets de recherche et de développement dans les programmes de formation des enseignants;
- le développement et l'échange de matériel didactique, par exemple le logiciel didactique;
- la coopération entre les institutions et les organisations à l'égard de l'éducation à distance;
- l'accès commun aux réseaux d'informations et aux banques de données;
- les réflexions sur les droits concernant la propriété intellectuelle et sur les accords en matière de logiciel, de banques de données et de réseau d'informations.

L'ODL AU DANEMARK

Au Danemark, où l'éducation et la formation tout au long de la vie sont traditionnellement considérées des éléments faisant partie du service publique, l'Open and distance learning ne compte pas sur une longue histoire.
Le Danemark a une longue tradition d'enseignement à distance par radio, télévision et cours par correspondance, même si ceux-ci ont eu une incidence marginale au niveau national. Jusqu'à il y a quelques années le pays n'a jamais eu une politique officielle de l'éducation

concernant l'éducation à distance en tant que partie intégrante du système d'éducation publique.
Au cours des années 80 on a réalisé plusieurs expériences et des projets-pilote concernant les nouvelles modalités d'enseignement et d'apprentissage moyennant l'utilisation des technologies. Celles-ci comprenaient le CAL (Computer Aided Learning), le multimédia, le *computer conferencing*, Internet et le courrier électronique, mais elles n'ont été intégrées que partiellement dans la stratégie politique locale/nationale.
L'ODL en soi et les technologies de soutien à l'apprentissage ne faisaient pas partie de la politique traditionnelle sur l'éducation jusqu'aux années 90. Beaucoup d'écoles étaient pourtant equipées avec des ordinateurs et les étudiants y avaient en général libre accès. Au cours des années 90 le gouvernement a développé une stratégie globale pour intégrer les ordinateurs et les ICT afin d'augmenter l'accès des étudiants aux ordinateurs et aux réseaux de communication en établissant une structure rationnelle. La structure technologique est vue comme une condition requise indispensable pour le développement de nouvelles modalités d'éducation et d'apprentissage qui détermineront l'intégration dans la nouvelle société de l'information.
Le gouvernement danois, conscient de l'apport que les ICT peuvent accorder à l'éducation et à la formation, a adopté de nombreuses initiatives, telles que: l'institution d'un réseau électronique dans le domaine de l'éducation en créant une connexion entre les institutions de l'éducation et celles de la formation, et un réseau qui relie les institutions de recherche et de développement; la création d'un Centre National Danois pour l'Apprentissage Supporté par la Technologie, pour l'éducation au niveau secondaire et universitaire et pour la formation des adultes et des enseignants; l'élaboration d'un plan d'action gouvernemental pour les années 1995-96 où l'intégration des ICT dans l'éducation et dans la formation constituent le pivot pour la formation des enseignants; l'augmentation du nombre des ordinateurs dans les écoles; la création d'un centre virtuel pour les ICT et pour la recherche et le développement (R&D).
Le défi principal dans la construction de la société de l'information porte sur le développement des ressources humaines; c'est un élément fondamental à considérer lorsqu'on affronte les changements sociaux nécessaires afin de bénéficier des avantages offerts par la technologie.
Les stratégies du système éducatif devraient être réexaminées afin d'obvier à:

- la nécessité de préparer les personnes de chaque âge aux changements des qualifications, des compétences, et des modèles de travail, d'entreprises et de services dans le contexte du travail et de la vie sociale.
- la nécessité d'assurer l'accès au système éducatif afin d'obvier au besoin d'accroître les qualifications et l'évolution des compétences dans des groupes diversifiés à partir de la couche des enfants jusqu'à celle des personnes âgées.

LA POLITIQUE DE L'ODL EN FINLANDE

Le Ministère de l'Education a rédigé un plan d'action pour la période 1995-99 afin d'assister la Finlande dans son parcours vers la société de l'information.
Le programme vise à mettre les institutions éducatives de chaque niveau dans les conditions de pourvoir les respectifs étudiants des qualifications et des connaissances requise par une société de l'information.
Les élèves qui achèveront l'école en l'an 2000 devront posséder les connaissances et les qualifications nécessaires pour l'utilisation autonome des logiciels, pour l' envoi de messages et le repérage d'informations à partir du système et pour l'utilisation des technologies de l'information et de la communication dans leurs études et dans la vie quotidienne. Les mêmes qualifications devraient être possédées aussi par les étudiants plus âgés et par les adultes.
L'activité des écoles et des autres institutions éducatives dans les années prochaines pourra compter sur un soutien financier adressé:

1. Aux programmes en réseau: le subside (50% du prix d'achat) sera affecté à l'achat de l'équipement nécessaire pour la connexion aux réseaux externes. Les écoles qui ne

disposent que d'équipements minimes ont déjà été facilitées financièrement dans l'achat d'ordinateurs et dans la connexion aux réseaux locaux.

2. Aux programmes pour le développement des méthodes et du matériel pour l'enseignement moyennant des projets-pilote visant à établir et à développer la recherche et les pratiques pédagogiques en matière d'intégration des technologies de l'information et de la communication.
3. A la formation en-service des enseignants: peu sont les enseignants qui disposent d'une formation sur les ICT et qui sont à même de soutenir leurs collègues et de favoriser le développement d'une coopération parmi les enseignants à l'intérieur des respectives écoles.

L'ÉDUCATION ON-LINE EN ISLANDE

Fréquenter l'école a toujours été l'un des principaux problèmes en Islande à cause de la structure géomorphologique du pays et des difficultés dans la communication.
En Islande l'éducation on-line a été développée par trois institutions. L'objectif n'a pas été celui de développer l'apprentissage à distance, mais plutôt celui d'aider les étudiants à suivre les cours lorsqu'il leur est impossible de se rendre à l'école. Les examens ont lieu dans la localité où habitent les élèves. On prend des accords avec une école dans les entourages, les devoirs sont envoyés à cette école et les élèves sont priés de s'y présenter pour passer leurs examens. Les compositions sont transmises à l'institution pour l'éducation à distance où elles seront évaluées.
Les principaux instruments de communication sont le courrier électronique et le World Wide Web. L'éducation à distance est un secteur en croissance constante dans le système d'éducation islandais, en raison de son utilité, et plusieurs éléments indiquent que sa popularité va augmenter au cours des prochaines années, car les gens vont se rendre compte que l'éducation jouera un rôle de plus en plus important dans un monde en constante évolution.

LA POLITIQUE DE L'ODL EN NORVÈGE

Il n'existe pas d'organisme central ayant fonction de coordinateur en matière d'ODL. L'éducation aux niveaux primaire, secondaire et universitaire et l'éducation pour les adultes sont coordonnées par trois organismes différents.
On fait souvent mention de l'ODL dans les documents politiques norvégiens, mais les ressources affectées à ce domaine sont assez réduites et il est difficile de discerner une politique nationale cohérente sur l'ODL supportée par des ressources adéquates. Le Ministère et le gouvernement sont cependant en train d' apprêter une nouvelle réforme dans le domaine de l'apprentissage continu des adultes. Il reste à voir quel sera le rôle accordé à l'ODL dans ce contexte, et s'il sera accompagné par des réformes organisationnelles et/ou financières qui pourront changer la situation actuelle.

LA POLITIQUE DE L'ODL EN SUÈDE

L'ODL est présent et profondément enraciné en Suède depuis les années 60. L'éducation des adultes a toujours joué un rôle principal dans le système de l'éducation suédois, et cela a été possible grâce à un acte du parlement qui affectait des financements et qui permettait de les utiliser gratuitement. Au niveau secondaire et universitaire, on avait fondé deux Instituts Nationaux pour l'éducation à distance qui réalisaient et distribuaient uniquement des cours à distance.
Au cours des années 70 on a créé un système extrêmement décentralisé. La société de la télévision nationale avait été chargée spécifiquement de fournir des cours éducatifs à distance. L'éducation à distance a été réalisée également dans les entreprises.
En ce qui concerne la technologie de l'information, on a réalisé de remarquables investissements dans l'infrastructure et dans le développement.
Les investissements affectés par le gouvernement suédois aux technologies de l'information ont déterminé une plus vaste utilisation des ordinateurs et de l'Internet dans le monde. Le

gouvernement a pris également l'initiative de destiner un certain nombre de ressources afin d'encourager la coopération entre universités. Cette action a donné lieu à l'établissement d'une série d'associations universitaires visant à développer des projets d'éducation à distance.
Une troisième initiative, réalisée en 1995, a concerné la création d'une Commission sur les méthodologies de l'ODL, ayant la tâche de mettre au point les stratégies pour les politiques de l'éducation à distance. Cela concerne tous les systèmes éducatifs pour les adultes et tient compte des alternatives possibles par rapport au rôle joué par la Société de la Télévision avec des finalités éducatives. La Commission dispose de considérables ressources financières et elle a fait démarrer 100 projets qui agglomèrent des niveaux différents de systèmes éducatifs de différents pays. La Commission devra en présenter les résultats au Ministère en l'été de l'année 1998.

3.6 ÉVALUATION DES POLITIQUES

3.6.1 L'évaluation des technologies du programme d'enseignement et d'apprentissage du UK Higher Education Funding Council.

M. Elliot Stern (Tavistock Institute, UK) a focalisé l'attention sur un certain nombre d'éléments-clé de l'évaluation en relation au Programme d'enseignement et d'apprentissage du UK Higher Education Funding Council (TLTP - Teaching and Learning Technology Programme).
Le TLTP a été lancé en 1992 par le Universities Funding Council (UFC) de l'époque.
Ce programme visait à «rendre l'enseignement et l'apprentissage plus productifs et efficaces en utilisant la technologie moderne» et à «aider les institutions à répondre efficacement à l'augmentation considérable du nombre d'étudiants et à promouvoir et à préserver la qualité de leur offre».
Les programmes innovateurs comme le TLPT peuvent tirer des bénéfices importants de cette évaluation, surtout quand ils concernent les nouvelles technologies.
L'évaluation peut contribuer à améliorer continûment les résultats.
De plus, l'évaluation d'un programme peut aussi représenter une source d'apprentissage non seulement par la réflexion sur les difficultés et sur les échecs, mais aussi en réfléchissant sur les résultats et sur les réussites.
Le point de départ est constitué par la conscience que l'évaluation est une source d'apprentissage non seulement pour ceux qui gèrent le projet mais aussi pour ceux qui y participent (comment participer à ce type de projets).

L'action d'évaluation, peut avoir de multiples objets:
- les besoins
- la réalisation
- les *outputs* (les résultats)
- l'impacte.

En particulier, en ce qui concerne les produits, les meilleurs exemples de l'innovation sont généralement représentés par les produits développés par les personnes ou les institutions qui ont une longue expérience dans la didactique et dans l'enseignement.
De plus, l'impacte peut avoir lieu à un double niveau: en termes de redistribution du pouvoir et en termes de adoption d'une approche stratégique au niveau institutionnel.
Un ultérieur élément général d'évaluation est représenté par les compétences que les évaluateurs devraient avoir et qu'on pourrait identifier comme compétences de conseil et comme compétences liées à la capacité d'établir des relations avec les personnes concernées par le processus.
Sur la base de ces informations fondamentales, le Dott. Stern a mis l'accent sur les conclusions principales de l'évaluation du TLTP, synthétisées par la suite:

1. L'évaluation aurait pu contribuer davantage à l'apprentissage cumulatif de TLTP.
2. Bien que les projets aient été encouragés à entreprendre leur évaluation au niveau local, il n'y avait aucun cadre ou mécanisme par lequel les évaluations des projets auraient pu informer la direction générale du programme ou fournir l'épreuve que les objectifs au niveau du programme ont été atteints.
3. Les projets étaient très diversifiés par rapport aux ressources destinées à l'évaluation, au genre d'organisation de l'évaluation, à l'ampleur de l'évaluation et à l'expérience d'évaluation qu'ils étaient en mesure de produire.
4. Les évaluations du projet, lorsqu'elles étaient réalisées, adoptaient pour la plupart une approche d'évaluation formative des produits (matériels et services), et seulement une minorité essayait une évaluation sommative.
5. L'expérience de l'évaluation aurait dû être rendue disponible pendant la phase initiale de la définition du projet.

Le débat général incité par la réflexion de M. Stern a focalisé l'attention sur la dimension temporelle de l'évaluation, sur les compétences des évaluateurs et sur les méthodologies utilisées pour l'évaluation.
L'attention était focalisée sur les différences dans les approches et dans les méthodologies des différents pays, sur les problèmes rencontrés et sur les solutions repérées.
L'évaluation peut se différencier de plusieurs manières d'un pays à l'autre; pourtant, l'un des problèmes communs apparus lors du débat est représenté par les difficultés dans l'évaluation des projets (évaluation interne) de façon objective et par le fait que, en même temps, une évaluation externe est souvent vue de manière négative à cause de la crainte face à l'éventuelle suspension du financement.
Il existe cependant la nécessité d'une solide collaboration entre les évaluateurs internes et externes, afin de comprendre au fond les «clients», ce qui pourrait représenter l'évaluation la plus correcte pour ce type de projets.

3.6.2 Évaluation des politiques de l'ODL – Considérer l'évaluation à l'instar d'une Stratégie

L'apport du Dott. Marino Ostini (Bureau Fédéral Suisse de l'Éducation) a focalisé l'attention sur trois questions-clé: la politique, la gestion, le gouvernement; le discours a traité aussi l'information, les décisions et les aspects spécifiques de l'Évaluation des Politiques ODL.
L'apport du Dott. Ostini relevait d'un certain nombre de publications officielles de 1996 et des réflexions réalisées au cours de trois conférences (la Conférence CERI à Maastricht, en Septembre 1995, la Conférence BIE à Tokyo, en Septembre 1995, et la 45ème Conférence Internationale sur l'Éducation de Genève, en Septembre 1996).
Ces trois évènements et les «Travaux de révision de la classification internationale type de l'éducation (CITE)» de l'UNESCO ont permis de fournir un cadre ample et complet des principaux éléments d'une politique mondiale en faveur de l'intégration de l'ODL en termes de problèmes, de stratégies, de points forts et de points faibles.

En l'espèce, son apport pivotait sur les secteurs, sur les besoins et sur les problèmes suivants:
- les priorités des euro-dirigeants: les stratégies d'intégration de l'ODL, de croissance de la quote-part du marché, de la qualité, des bénéfices du capital, de l'amélioration de la qualité des services aux clients;
- le cas du gouvernement global, qui concerne les médias, la prise de décisions et la communication globales;
- la capacité de gouverner des policy makers, en relation aux méta-tâches des decision makers en termes de perfectionnement des idées politiques et d'amélioration des compétences; la capacité d'accepter l'innovation; les responsabilités vers le système

éducatif, la conscience des conséquences positives et négatives des décisions par rapport au système.

- les connexions entre recherche, information et «policy making»: la relation problématique et critique entre chercheurs et preneurs de décisions n'est pas nouvelle et elle nécessite d'une solution; la fonction et le sens de la recherche vis-à-vis de la formation ne sont pas toujours évidents;
- il doit être clair que l'éducation continue implique trois secteurs du marché: le secteur formel, le secteur informel et le secteur commercial;
- on ressent le besoin d'un identification réelle des habiletés et des compétences dans l'évaluation de l'équité, de la qualité, des résultats et des marchés;
- pour utiliser une métaphore, le secteur public devrait prendre la responsabilité de «construire des autoroutes» et de «régler la circulation».

L'évaluation des politiques ODL signifie, finalement:

- adapter les instruments d'évaluation aux différentes dimensions;
- un triple défi: accessibilité, qualité, coûts;
- créer les liaisons manquantes pour connecter les différentes modalités avec lesquelles on développe le matériel, le personnel de l'éducation apprend et tous les programmes sont évalués.

Actuellement il existe un consensus (au niveau international) sur le partage de rôles et de responsabilités dans l'évaluation sur l'auto-réglementation; «peer review», mise en place des financements, amélioration de la validation, sélection des technologies, assurance des infrastructures, développement des compétences et implication du personnel, apprentissage réciproque.
Il y a aussi des éléments manquants (ceux ou celui qui démarre, les contenus, le partenariat, les encouragements) qu 'on est censé explorer lorsqu'il s'agit d'évaluation de l'ODL.

4. SYNTHESE DES RÉSULTATS DU GROUPE DE TRAVAIL DE COPENHAGUE (26-28 MAI 1997)

4.1 INTRODUCTION

Le Groupe de Travail visait à développer davantage le débat riche en résultats du séminaire de l'année précédente (Florence, 15-18 Octobre, 1996) et à jeter les bases du forum électronique afin de mettre au jour et de répandre, aussi bien au niveau régional qu'au niveau national, le cadre conceptuel commun développé au cours des deux années de l'activité.

Le forum électronique, élaboré sur la base des résultats de la recherche, du Séminaire de Florence et du Groupe de Travail de Copenhague, adopte la structure suivante:

- il constitue la liaison de communication pour une analyse approfondie et pour des débats sur les problèmes liés à l'ODL et aux sujets découlant des deux séminaires;
- en même temps il joue un rôle essentiel dans la diffusion des résultats des politiques et des cas de bonnes pratiques;
- il a la fonction d'un observatoire sur les politiques dans le domaine de l'éducation et de la formation en ODL ou bien il a un impacte décisif sur ce domaine.

Au Groupe de Travail ont participé 15 experts provenant de 11 pays outre les partenaires du projet. Les expertes ont discuté à partir des notion fondamentales qui avaient été définies et approuvées à Florence. On a créé sept groupes de discussion afin d'analyser de façon plus détaillée et de développer les questions dégagéès pendant les activités précédentes.

Le débat a donc porté en particulier sur les sujets suivants:

1. Les motivations des politiques de l'ODL
2. La façon d'intégrer des mesures de soutien à l'ODL dans des contextes politiques plus vastes
3. La façon d'évaluer les politiques de l'ODL
4. Les politiques de l'ODL pour l'école
5. Les politiques de l'ODL pour l'éducation supérieure
6. Les politiques de l'ODL pour l'éducation et la formation des adultes
7. La fonction des différents niveaux institutionnels dans les politiques de l'ODL

Chaque sujet de débat a été introduit par une liste de cinq «questions» ayant pour but de stimuler la discussion sans l'obliger excessivement de suivre un parcours prédéterminé.
Les participants ont formé des groupes de travail afin de faciliter la discussion approfondie et l'analyse des points susmentionnés. Ensuite les conclusions de chaque groupe ont été formalisées dans un document et commentées par les autres groupes; enfin elles ont été élaborées par les participants et, finalement, présentées par un rapporteur désigné par chaque groupe.
Le procédé adopté aurait dû constituer une première simulation des modalités de fonctionnement du forum électronique.
On a décidé que les destinataires du projet soient des fonctionnaires publics, des conseillers, et en tous cas des personnes concernées par les politiques publiques liées à l'ODL ou aux programmes de l'ODL ayant des contenus politiques (au total 500 environ au niveau européen).
Parmi les requêtes éventuelles qui pourraient dégager de ce groupe de destinataires auxquels le projet vise à répondre, on énumère:

- les informations sur l'expérience développée dans d'autres pays
- la recherche d'idées concernant des mesures efficaces à réaliser
- la recherche du partenariat
- les suggestions sur la réalisation et sur le suivi des politiques

- les échanges d'expérience
- la concertation d'idées et de nouvelles initiatives possibles
- les informations sur les résultats disponibles concernant les programmes développés dans d'autres pays.

Dans les pages qui suivent on présente les observations qui sont découlées du Groupe de Travail Interprofessionnel de Copenhague et qui ont été la base d'un débat parmi les personnes concernées.
Pour chaque sujet on indique les participants et on expose une synthèse des observations les plus significatives qui sont découlées du débat, suivies par un tableau contenant les réflexions sur le sujet au sein du Séminaire de Florence. Les résultats ont été résumés dans un transparent mis au point par le rapporteur du groupe et inséré dans le tableau qui conclut le paragraphe thématique.
Les séances par secteurs (école, université et formation superieure) n'ont pas été développées complètement en raison du manque de temps, et pour cette raison les réflexions correspondantes n'ont pas été insérées dans cette publication. On peut pourtant y accéder grâce aux forums de discussion qui ont été mis en place en tant que résultat du projet.

4.2 LES MOTIVATIONS DES POLITIQUES DE L'ODL

Partecipants: Séance Plénière

Sujets de débat proposés:

1. A-t-on défini clairement les objectifs de l'ODL?
2. Est-ce que les objectifs différents des politiques de l'ODL constituent un problème réel?
3. Les politiques de l'ODL devraient-elles supporter la concurrence ou devraient-elles plutôt promouvoir la collaboration entre les acteurs du côté de l'offre?
4. Quels objectifs pourrait-on proposer afin de mettre en relief l'ODL?
5. L'ODL est-il politiquement marqué?

Pour introduire ce sujet on a rappelé les points et les principaux résultats du séminaire de l'année passée:

- la tendance à passer de paradigmes fondés principalement sur l'enseignement à des paradigmes basés essentiellement sur l'apprentissage.
- l'émergence de modèles hybrides, qui intègrent des segments ODL, des segments fondés sur la classe et des segments fondés sur le contexte (context-based) dans le même parcours d'apprentissage, est un indicateur de la façon où l'ODL pourra enrichir les modèles d'organisation du processus d'apprentissage préexistants au lieu de les remplacer;
- la notion de l'ODL se dégage sur la base d'une double impulsion: la croissance de la demande en termes de qualité et de quantité, là où la demande devient de plus en plus complexe et diversifiée et, d'un côté, la nécessité de répondre à cette demande et, de l'autre côté, l'augmentation de la pression qui découle de contextes différentes, par exemple les producteurs du secteur multimédia, les éditeurs, les sociétés de télécommunication, etc.
- les problèmes liés au marché: l'absence d'un marché structuré et le rôle des autorités publiques en relation aux interventions dans la situation;
- dans certains pays les politiques de l'ODL ont été réalisées grâce aussi à l'accent mis par l'Union Européenne sur l'ODL (Mémorandum, Livre Blanc et Programmes de la Communauté Européenne tels que Leonardo da Vinci et SOCRATES, où l'ODL exerce une action transversale);
- une tendance concrète à l'intégration des politiques: au cours des dix dernières années on a assisté, outre les politiques mises au point spécifiquement pour promouvoir des

technologies de l'éducation et de l'ODL, la diffusion de politiques visant à innover les systèmes éducatifs et de la formation, à accroître le travail, à favoriser le développement socio-économique régional, qui ont exhorté indirectement vers l'adoption de l'ODL et des ICT dans le domaine de l'éducation (l'ODL est en général intégré en tant que composante du système).

En particulier, l'adoption de l'ODL peut contribuer à:

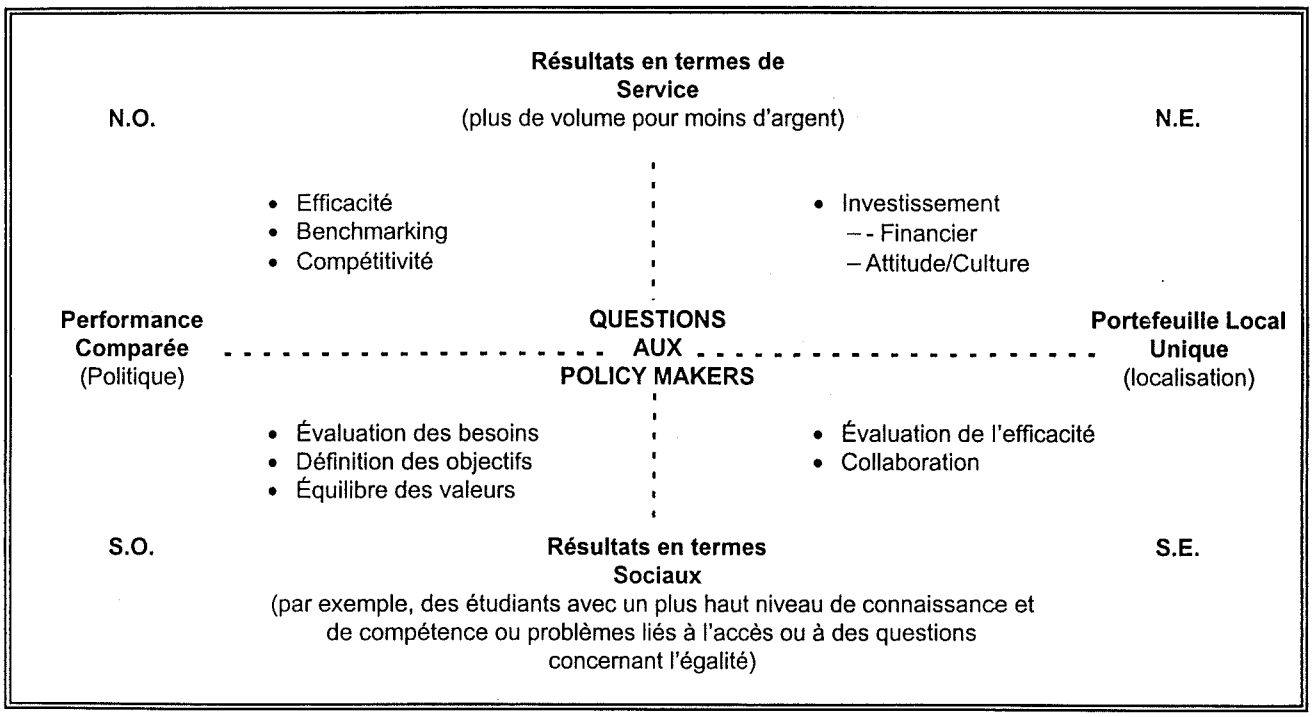
- ◊ passer d'un paradigme fondé sur l'enseignement à un autre basé sur l'apprentissage;
- ◊ passer des systèmes de certification fondés sur les qualifications à un système basé sur les compétences de concert avec l'adoption d'une approche modulaire;
- ◊ dépasser les barrières en entrée en relation à l'offre d'apprentissage;
- ◊ créer un réseau au niveau européen;
- ◊ s'acheminer vers la société de l'Information;
- ◊ favoriser le processus d'internationalisation de l'information;
- ◊ appuyer un parcours de croissance culturelle et professionnelle tout au long de la vie (lifelong learning).

♦ L'ODL est un vecteur pour l'innovation des systèmes. En particulier, l'ODL constitue un outil pour consolider la coopération entre les formateurs et les ingénieurs pedagogiques et les entreprises et les individus (afin de réaliser la formation avec les entreprises et non pas pour les entreprises);

♦ L'existence de trois types d'encouragement pour introduire l'ODL: technologique, économique et lié à la solution des problèmes de la qualité.

Cette présentation a été suivie par un débat sur la terminologie de l'ODL et sur les modalités de sensibilisation des policy makers par rapport aux questions liées à l'ODL.

La richesse du débat et les différentes positions peuvent être synthétisées par le diagramme suivant, qui a été élaboré par le Prof. Greville Rumble.



Le schéma peut s'appliquer à de nombreuses politiques, y compris les politiques liées à l'ODL. Il représente la carte des acteurs qui peuvent être utilisés afin de convaincre les policyde l'importance et de l'efficacité de l'ODL.

Sur la base de la position, du terrain politique, du contexte et du point de vue du policy maker, on peut localiser l'ODL dans n'importe quel des secteurs du schéma et on peut mettre en relief

de différents aspects et sujets pouvant l'exhorter à insérer l'ODL dans son legenda e parmi ses priorités.
Les deux pôles de l'axe vertical sont formés d'un côté par les résultats en termes de service, par exemple les sujets liés principalement à la dimension économique, et de l'autre les résultats au niveau social, qui sont en relation avec les sujets liés à la dimension sociale.
L'axe horizontal révèle deux différents aspect qui pourtant ne s'excluent pas réciproquement: le premier représente une action politique qui pourrait constituer le point de repère pour la communauté internationale et qui pourrait être transférée dans d'autres contextes; à l'autre bout on détecte un type de politique qui répond principalement à des questions et à des problèmes ayant une nature locale.

Beaucoup d'orientations politiques pourraient être interprétées en termes de influences des initiatives publiques qui soutiennent l'ODL et les technologies de l'apprentissage:

- en premier lieu, le souci d'innover les systèmes d'éducation e de formation en accroissant l'accessibilité et la flexibilité des opportunités d'apprentissage, de la rationalisation des frais et de l'introduction d'une perspective d'investissement dans les coûts liés à l'éducation/formation;
- le souci d'ajouter une dimension européenne à l'offre d'éducation et de formation nationale;
- le souci d'assurer la qualité de l'offre et de «sauvegarder les consommateurs» contre les mauvaises pratiques et les attentes irrationnelles;
- le souci de développer une zone du marché pour les technologies de l'information et de la communication;
- le souci de développer une industrie européenne du multimédia à même de concurrencer dans un marché global.

Toutes ces orientations ont été jugées légitimes, mais on s'est accordé sur le fait qu'une perspective de l'éducation et de la formation devrait être toujours considérée en tant que priorité dans l'orientation des politiques.

4.3 COMMENT INTÉGRER LES MESURES DE SOUTIEN À L'ODL DANS DES MILIEUX POLITIQUES PLUS VASTES.

Participants: Daniel Apollon, Haukur Augusstson, Carl Holmberg, Nikitas Kastis, Lea Lakio, Keith Lindsay, Mary O' Mahony, Marino Ostini, Monica Turrini.

Sujets proposés pour le débat.

1. L'ODL est aperçu en tant que sujet de relief par:
   - ◊ les policy makers?
   - ◊ les professionnels du secteur de l'éducation et de la formation?
   - ◊ la population en général, et les «vainqueurs potentiels» en particulier?
2. Devrait-on abandonner le terme ODL afin de camoufler la notion d'ODL dans une gamme de politiques plus vaste?
3. Qui sont les partenaires naturels des autorités publiques dans le contexte du développement des politiques de l'ODL?
4. Comment peut-on établir un partenariat adéquat sans «vendre son âme»?
5. Qui est-ce qui paye pour le développement de l'ODL?

Depuis Florence:

Au cours du séminaire on s'est accordé sur l'usage d'un signifié plus vaste d'ODL qui englobe l'utilisation des technologies de l'information et de la communication dans le processus d'apprentissage même dans des contextes conventionnels d'apprentissage tels que la salle de classe ou le lieu de travail.
Le débat s'installait dans le cadre d'une tendance qui pouvait être observée dans la transition d'un paradigme fondé sur l'enseignement à un paradigme basé sur l'apprentissage, dans les systèmes éducatifs et de formation. Cette tendance requiert une ré-ingénierie du projet du processus d'apprentissage dans lequel les exigences de ceux qui apprennent, aussi bien que leurs caractéristiques et celles du contexte, se situent au centre de l'ingénierie des systèmes d'apprentissage.
L'apprentissage est reconnu en tant que modèle dégageant d'une action sociale à tous les niveaux (la société de l'apprentissage, l'organisation qui apprenne: *learning organisation,* l'apprentissage tout au long de la vie pour tous); paradoxalement l'apprentissage ne trouve pourtant pas une réalisation concrète à l'intérieur des systèmes d'éducation et de formation, qui conservent une tendance à perpétuer leurs modèles d'organisation et qui sont, en grande partie, des systèmes d'auto-référence.
L'ODL devrait être pénétré et proposé en tant qu'adjonction, plutôt que de remplacement: l'emergence, à laquelle on a assisté, de «modèles hybrides» qui intègrent des aspects de l'ODL, des aspects de formation dans la salle de classe et de formation context-based dans le même parcours d'apprentissage, indique que l'ODL va pouvoir enrichir les modèles préexistants d'organisation de l'apprentissage au lieu de les remplacer.
La difficulté d'implanter une notion nouvelle comme l'ODL dans l'ordre du jour des hommes politiques (qui n'en ont jamais fait l'expérience directe en tant qu'usagers) a été constatée par tous les participants; on a identifié un point critique spécifique dans le manque d'appréciation, de la part des «vainqueurs potentiels», des bénéfices que l'ODL peut leur accorder et de la conséquente absence d'une convergence d'intérêts des groupes bénéficiaires par rapport à leur réclamation de développement de l'ODL.
L'usage de la notion de «marché» a été l'objet d'un débat et il a donc été jugé utile, en même temps qu'un certain nombre de restrictions adoptées, par rapport aux points suivants:

- la spécificité des systèmes d'éducation et de formation, où coexistent une perspective institutionnelle et la logique du marché;
- la définition incertaine de la «zone de compétitivité» correspondante, qui dégage de la proximité du «marché ODL» non seulement avec les principaux contextes éducatifs et de formation, mais aussi avec l'édition, le multimédia, les services de télécommunication et l'industrie de la télévision;
- le niveau réduit de développement et de structuration dans le «marché ODL».

L'existence d'organisations et d'associations adéquates d'usagers a été jugée l'une des conditions indispensables en vue de la restructuration du marché de l'ODL et afin d'atteindre un contexte opérationnel acceptable.
Les fournisseurs d'ODL sont jugés généralement faibles, dispersés, répartis de façon irrégulière dans les pays européens, pour la plupart incapables d'affronter de consistants investissements et de faire face aux nombreux défis liés à la distribution au niveau continental.
Sauf quelques exceptions, les policy makers de tous niveaux n'ont pas une expérience directe de l'Open Distance Learning. Leur expérience dans l'éducation et dans la qualification provient de l'enseignement traditionnel dans la salle de classe, caractérisé par le rôle de l'«enseignant» combiné avec différentes fonctions -- de l'organisation à l'expérience sur le contenu -- et du rôle de l'élève en tant qu'«objet» du processus. Sur la base de cette expérience le passage souvent mentionné «d'un paradigme fondé sur l'enseignement à un autre basé sur l'apprentissage» ne peut qu'être imaginé au niveau mental, sans qu'il puisse être ancré à une expérience personnelle.
Jusqu'à présent les nouvelles expériences dans l'ODL ont été limitées à quelques espaces réduits (par exemple des personnes suivant des parcours professionnels alternatifs), et les expériences individuelles à l'égard de formes plus avancées d'éducation et de formation fondées sur la télématique ne sont pas répandues, car elles se tiennent à quelques contextes expérimentaux. Le problème est même aggravé par le fait que beaucoup des décideurs politiques sont «en retard» par rapport à l'utilisation individuelle des composantes-clé de la télématique. Les ministres ne se servent pas encore de manière intensive du courrier électronique ou du télétravail coopératif et les sociétés et les institutions où les cadres sont les derniers à utiliser les technologies avancées sont nombreuses.
L'absence de familiarité avec les conditions requises, les processus et les limitations.

À cause du manque d'expérience personnelle susmentionné, beaucoup de policy makers ont une conception isolée par rapport aux décisions liées à l'ODL qui ne concernent pas l'adhérence pleine et complète aux conditions requises, aux processus généraux et spécifiques et aux différentes échelles de bénéfices, d'incertitudes et de limitations.
Cette absence d'intégration réduit le potentiel du transfert de l'expérience à partir d'autres contextes moyennant des processus décisionnels.
Le «manque d'enracinement» ou «manque de placement dans un contexte» sont donc des questions-clé à affronter.
La carte des acteurs consentirait une action davantage consciente dans l'ingénierie des projets et dans la réalisation des politiques de l'ODL.
Les stratégies d'exécution devraient être fondées davantage sur l'accroissement du nombre de vainqueurs plutôt que sur l'énergie et sur l'implication des vainqueurs potentiels.
La stratégie devrait donc se concentrer sur la recherche des «vainqueurs cachés», qui ne sont pas conscients des bénéfices potentiels liés à l'adoption de l'ODL. La création d'un processus de communication et d'échange entre les différents groupes de vainqueurs potentiels est un élément gagnant pour une stratégie promotionnelle de l'ODL.
On a convenu sur le fait que, en termes généraux, une réalisation gagnante des politiques de l'ODL implique la création d'un partenariat solide (parmi des organisations pareilles afin d'atteindre une masse critique ou une dimension européenne, mais aussi parmi des organisation de nature différente, afin d'intégrer les compétences et d'évaluer le marché); mais on a aussi convenu sur un certain nombre de distinguos, afin de communiquer que quelques partenariats pourraient être utilités afin de devancer l'innovation ou de protéger un groupe d'acteurs de relief.

4.3.1 Signifié étendu du terme ODL

Dans le cadre du débat sur les problèmes susmentionnés, les participants ont accueilli le signifié étendu de la notion d'ODL, de ses composantes et de ses aspects différents par rapport au contexte politique local où l'ODL se situe.
Face au dilemme entre l'atténuation ou le renforcement de la notion d'ODL, les participants ont accepté d'abandonner le terme afin d'atteindre l'objectif principal consistant à accroître la conscience des hommes politiques par rapport à l'ODL. Cette réflexion signifie qu'on n'abandonne ce terme que dans le cas où les caractéristiques du contexte le demandent, ou dans le cas où cela peut contribuer à améliorer la diffusion de l'ODL.
Bien que les participants conviennent en principe sur une telle approche, ils sont tout à fait conscients des conséquences négatives que ce choix pourrait impliquer.

4.3.2 Interférence avec les nouvelles technologies

Sans aucun doute l'une des conséquences possibles pourrait être l'interférence avec les nouvelles technologies. Cette interférence est liée à la tendance des policy makers, qui ne peuvent pas compter sur des expériences préexistantes dans le domaine, à identifier l'ODL avec les nouvelles technologies. Comme il est apparu du débat au cours du séminaire de Florence, l'introduction de l'ODL et des technologies ICT implique la redéfinition du projet du processus d'apprentissage. Le risque existant dans l'application d'une politique focalisée sur la diffusion des nouvelles technologies coïncide avec la perte de la dimension innovatrice en termes sociaux et pédagogiques.
Le passage d'un paradigme fondé sur l'enseignement à un autre basé sur l'apprentissage n'est réalisable qu'en focalisant l'attention sur la dimension de l'accès, par exemple sur l'analyse des barrières qui limitent l'accès à l'éducation et à la formation. Cela implique la redéfinition du système afin d'agrandir et d'accroître les opportunités pour les différentes catégories d'usagers.

4.3.3 Focaliser l'attention sur la pratique plutôt que sur la technologie

L'analyse du contexte politique, de la demande et des exigences est essentiel afin de définir les politiques. Sur la base des résultats de cette analyse il est possible de sélectionner une terminologie qui mette en relief telle ou telle composante de la notion considérée. Il est donc indispensable de se rendre conscient de la complexité de la notion d'ODL, qui ne peut en aucun cas être réduite à une seule de ses composantes ou de ses corollaires.
Une approché orientée vers le contexte peut donc se montrer particulièrement utile afin de surmonter la résistance des policy makers, mais elle ne peut pas justifier un manque de cohérence conceptuelle et méthodologique.

4.3.4 Acceptation du camouflage

En tenant compte du débat du séminaire de Florence concernant les cycles vitaux des politiques de l'ODL, les participants ont abordé la question si l'ODL doit être poursuivi dans le contexte de politiques spécifiques ou s'il doit au contraire être camouflé afin qu'il puisse influencer des politiques plus vastes.
Le groupe en a conclu que le choix doit être réalisé en fonction du contexte et du moment historique auxquels on fait référence et, si les conditions du contexte l'exigent, la notion de camouflage est acceptée. Les participants ont aussi essayé de mettre en relief les avantages et les limites liés au développement d'une offre parallèle, comme il est arrivé avec l'Open University au Royaume Uni.
De plus, ils ont mis l'accent sur le potentiel contenu dans l'approche ODL et sur le rôle de l'ODL en tant que moteur de changements et d'innovations, sans faire mention des modalités par lesquelles il est promu.

4.3.5 Partenariat

Les aspects innovateurs et complexes concernant la notion d'ODL ainsi que l'absence d'un marché structuré de l'ODL impliquent le développement d'un partenariat parmi les différents acteurs du secteur concerné.

4.3.6 Dimension économique

La dimension économique semble critique car, d'un côté, l'économie de l'ODL paraît être l'une des raisons qui peuvent attirer l'attention des hommes politiques alors que, de l'autre côté, il n'existe pas encore une réelle culture de l'évaluation de l'ODL par rapport à cette dimension.
L'un des aspects les plus intéressants mis en relief par le débat porte sur la constatation qu'il est encore assez difficile de relier l'ODL à une réduction efficace ou à un accroissement des coûts, et que le débat devrait plutôt être affronté en termes d'une nouvelle affectation des ressources.

4.3.7 Introduction de l'ODL dans l'agenda des politiques

Comme on l'avait déjà souligné au cours du séminaire de Florence, les participants ont mis l'accent sur l'exigence et sur la difficulté d'introduire la notion d'ODL dans l'ordre du jour des hommes politiques, ainsi que d'identifier les vainqueurs potentiels.

Synthèse du Groupe

Il existe des impératifs politiques communs tels que l'exigence
- d'améliorer l'accès à l'apprentissage
- d'améliorer l'équité des opportunités d'apprentissage
- d'accroître les niveaux de compétence
- d'améliorer le revenu de l'investissement économique et d'augmenter l'efficacité par rapport aux coûts

afin d'atteindre les objectifs économiques et sociaux.

En répondant à ces exigences, les institutions et les autres organisations qui fournissent la formation sont en train de redéfinir leurs frontières opérationnelles et de réaffecter les ressources. De nouveaux partenariats, de plus en plus nombreux, se forment et on assiste par conséquent à une décentralisation du processus et à une tendance du processus vers la localisation.
Dans le cadre du processus de changement, l'ODL joue ou est à même de jouer un rôle-clé. L'ODL traditionnel et les ICT sont en train de développer de façon intégrée des modèles d'offre de l'apprentissage qui décrivent et définissent des mesures de soutien fournissant des services d'apprentissage flexibles et de haute qualité tels que:
- l'adaptabilité aux circonstances individuelles
- l'ouverture qui ne sacrifie pas la qualité
- l'exemplification d'un partenariat efficace
- l'utilisation de systèmes consolidés et adéquats de certification de la qualité

L'ODL est donc un catalyseur du changement évolutif. Les conditions favorables pour l'application de l'ODL doivent être créées, et elles peuvent inclure, par exemple, la valorisation de l'apprentissage existant, le remplacement d'autres méthodes, ou de nouvelles approches fondamentales à l'enseignement et à l'apprentissage.
Mots-clé et notions: autonomie de ceux qui apprennent, flexibilité, qualité, équité, mobilité, dialogue, opportunités, changements des pratiques de travail, services de soutien, coût-efficacité.

4.4 COMMENT ÉVALUER LES POLITIQUES ODL

Participants: Erling Ljosa, Makis Potamianos, Graville Rumble, Elliot Stern, Joop Van Schie, Claudio Dondi.

Sujets proposés pour le débat:
2. Pourquoi évaluer les politiques de l'ODL?
3. L'évaluation peut-elle supporter le phénomène d'«emprunt» des politiques?
4. Disposons-nous des instruments nécessaires pour évaluer les politiques de l'ODL?
5. Existent-ils des indicateurs adéquats pour évaluer les résultats d'une politique de l'ODL spécifique?
6. Qui est-ce qui devrait évaluer les politiques de l'ODL?

Depuis Florence

Les approches à l'évaluation des politiques, aussi bien en termes généraux que par rapport au cadre spécifique de l'ODL, peuvent être orientées vers un ou plusieurs des objectifs suivants:
- evaluer la responsabilité/la réalisation d'une politique publique;
- evaluer l'efficacité de l'application de l'approche de gestion;
- développer un processus d'apprentissage collectif moyennant un monitorage partagé de toutes les activités, les ressources et les résultats.

Le troisième objectif à été jugé d'un commun accord extrêmement intéressant et adéquat dans le cadre spécifique de l'ODL, qui est caractérisé par une nouveauté relative, par un manque d'expérience consolidée des acteurs concernés, et par une élevée fluidité des exigences, des comportements et des contextes.

Afin de pouvoir réaliser des progrès significatifs dans la définition d'une approche pour l'évaluation des politiques dans le domaine de l'ODL, il est nécessaire de développer ou d'arriver à un accord au moins par rapport à quatre aspects théoriques:

- une théorie des acteurs concernés et des intérêts stratégiques corréspondants, des motivations, des comportements et de l'interaction;
- une théorie du domaine spécifique de l'ODL, ses définitions, ses frontières et sa probable évolution;
- une théorie des programmes publiques qui doivent être évalués; par exemple, compréhension de leurs contextes, de leurs mécanismes, de leurs objectifs, de leurs recrutements, des mécanismes de travail prévus et des résultats;
- une théorie du changement dans un domaine spécifique et plus vaste.

Les participants ont constaté que les politiques spécifiques de l'ODL ont généralement un cycle vital de cinq ans environ dans la plupart des pays européens; ces politiques tendent à s'affirmer alors que des actions expérimentales ont déjà été réalisées spontanément, d'abord en soutenant l'offre et le développement de l'infrastructure et ensuite la qualité de l'information et les projets-pilote orientés vers les besoins des usagers; successivement elles tendent à se diriger (ou à être intégrées avec) des politiques plus vastes visant à innover l'éducation et la formation, afin de soutenir le développement économique ou d'orienter la stratégie industrielle. Paradoxalement, elles tendent à se tarir lorsqu'elles ont du succès, c'est à dire quand elles ont atteint l'objectif de rendre l'ODL une composante «normale» des systèmes d'éducation et de formation.
Un phénomène significatif d'«emprunt des politiques» peut être analysé, dans ce contexte d'action, dans plusieurs pays européens: de nombreux gouvernements ont adopté des schéma pareils dans une période relativement brève, et dans beaucoup de cas ils ont tiré profit de l'expérience développée par les pays qui ont procédé les premiers. Les institutions européennes ont aussi considéré important le rôle de juge des orientations des politiques nationales et régionales dans ce domaine, en particulier dans les pays où l'expérience de l'ODL était plus réduite.
La rationalité économique ne devrait pas être vue comme la seule clé pour l'évaluation des politiques: la transparence des objectifs et des décisions ainsi que l'éducation des citoyens et des policy makers devrait être considérée en tant qu'objectif de l'évaluation des politiques.

4.4.1 La carte du milieu des politiques

Le Séminaire de Florence a dégagé un certain nombre de questions intéressantes. Le premier aspect se relie à la nécessité de définir une carte du milieu politique: cela signifie qu'il faut bien considérer le contexte où la politique s'installe et estimer les contenus implicites ou explicites dans chacune des mesures ou des programmations considérées.

4.4.2 Questions sur l'évaluation

Il y a trois questions fondamentales qu'on doit affronter lorsqu'on juge une politique:

1. Pourquoi est-ce qu'on a proposé l'ODL?
2. Quels aspects ont été accentués?
3. Dans quelle «phase du cycle» a-t-on introduit l'initiative publique?

La dernière question est liée aux conclusions tirées au Séminaire de Florence et elle se réfère au cycle vital que des politiques spécifiques de l'ODL ont généralement dans la plupart des pays européens (voir ci-dessus).

4.4.3 Évaluation et «emprunt» de politiques

L'évaluation joue un rôle important dans le cas de l'«emprunt» de politiques. L'évaluation d'une politique qui a été «empruntée» depuis un autre pays doit être fonctionnelle et propédeutique à l'application dans le nouveau contexte national, et elle devrait accompagner le processus tout entier de placement dans le contexte. L'approche devrait aussi être appliquée aux situations où le contexte normatif et culturel des pays concernés est assez semblable, par exemple le Royaume Uni, les États Unis, l'Australie.

4.4.4 Évaluation des sources d'information

On a identifié trois niveaux de fiabilité de l'information existante qui est utilisée pour des finalités évaluatives quand on juge une politique:

- jugements exprimés par des personnes impliquées dans la définition des politiques;
- avis indépendants, sources externes;
- révision indépendante systématique.

Chaque étude de cas devrait particulariser les trois niveaux dans la présentation d'une évaluation disponible.

4.4.5 Rationalité économique, navigation et adaptation

En se rattachant aux résultats du séminaire de Florence, les participants ont convenu que la rationalité économique ne peut être considérée la seule modalité de l'approche à l'évaluation d'une politique, mais qu'il faut aussi éviter de se retrouver de l'autre côté en tenant uniquement compte des processus d'adaptation et de navigation, sans considérer aucune direction.
Il peut y avoir quelques exceptions dans les cas où les objectifs sont clairs, où l'engagement vers ces objectifs est vaste et élevé (concertation et engagement de différents acteurs participants) et l'allocation des ressources est constant et systématique.

Synthèse du Groupe

On souhaite évaluer la façon dans laquelle l'ODL concourt à la réalisation des objectifs collectifs, industriels, de la citoyenneté, éducatifs.
On a développé une série de questions: quels buts peut-on atteindre avec l'apport de l'ODL? Quels aspects de l'ODL sont privilégiés (configuration de l'ODL)? Est-ce qu'il y a une dimension cyclique par rapport aux politiques de l'ODL dans ce contexte (convient-on qu'à un certain stade de développement, dans certains pays, il peut y avoir des politiques spécifiques de l'ODL)?
La distinction entre l'évaluation de l'efficacité des politiques et celle concernant l'application et l'apprentissage est fondamentale.
Cette notion a été appliquée au phénomène de l'«emprunt» des politiques où on fait une distinction entre l'évaluation des problèmes dans les différents pays (y a-t'il des problèmes communs?) et l'adaptation et le placement dans le contexte des solutions dans d'autres pays.

2EME SECTION
RÉCOLTE D'ÉTUDES DE CAS

INTRODUCTION

La deuxième partie de cette pubblication un certain nombre d'études de cas mis au point par les partenaires du projet et par les participants aux séminaires, même grâce au système de web-conférence permanent qui a été mis en place dans le cadre du projet ODL Policy Seminar.

Pour la récolte des études de cas on a mis au point deux fiches: une brève fiche pour l'identification et une deuxième fiche qui consent une description exhaustive de la policy; les deux fiches sont disponibles dans la web-conférence et elles constituent une invitation adressée aux «visiteurs» pour qu'ils décrivent des cas intéressants concernant les politiques de l'ODL.

L'introduction des études de cas dans le projet et dans la web-conférence répond au double bout du projet de fournir des informations concernant des cas concrets de politiques de l'ODL en Europe et de fournir une base pour l'échange d'opinions et pour le démarrage de nouvelles initiatives.

Cette composante du projet vise à établir un équilibre entre la dimension théorique et conceptuelle et la dimension davantage opérationnelle liée au développement des activités sur le terrain.

Jusqu'à présent on a sélectionné 9 études de cas: 6 appartiennent aux Pays Nordiques (3 à la Finlande, 1 à la Suède, 1 à la Norvege et 1 à l'Islande) et 3 découlent de la France, de l'Espagne et de l'Italie.

Les cas concernant l'Espagne et l'Italie présentent l'approche du Ministère de l'Éducation au sujet ODL, nouvelles technologies didactiques: les deux Programmes se concentrent sur l'amélioration de l'équité des opportunités éducatives et de la qualité de l'offre éducatif et sur le développement d'un système permanent de formation et de mise à jour à distance et flexible (ODL) pour les enseignants.

Le Programme Nouvelles Technologies de l'Information et de la Communication (PNTIC) a été établi par le Ministère espagnol en 1989, alors que le Programme italien est en phase de démarrage et il est caractérisé par la valorisation des expériences précédentes sur lesquelles s'insèrent les nouvelles initiatives.

Les deux Programmes visent à favoriser le développement de l'offre de produits ODL et la diffusion des équipements dans tous les instituts d'éducation, ainsi qu'à créer l'infrastructure humaine requise pour l'ODL.

Le cas français présente une expérience intéressante de collaboration entre la chaîne télévisée publique et une société particulière de services on-line qui a débuté à la fin de 1996 afin de contribuer à l'amélioration des méthodes didactiques et de sensibiliser les enseignants, les éducateurs et les parents à l'égard des bénéfices des technologies éducatives.

Pour conclure, les trois cas finlandais, le cas suedois, le cas islandais et le cas norvégien permettent de mieux comprendre les politiques et les tendances des pays scandinaves, dont l'expérience composite a été présentée au cours du séminaire de Florence et synthétisée brièvement dans cette publication.

Les trois mesures entreprises en Finlande par le Ministère de l'Éducation sont toutes caractérisées par un partenariat étendu qui a permis de réduire les problèmes typiques de la phase de réalisation et d'intégration dans le système. Tout en s'adressant à des objectifs différents (enseignants d'école d'un ordre et d'un niveau différents, sauf les universités, et employés des PME) les projets Nofnet et Kornet visent à la mise au point de systèmes de formation et de mise à jour intégrant de nouvelles technologies éducatives.

Avec Nofnet la Finlande vise à créer «l'infrastructure humaine», tandis que Freenet développe l'infrastructure technique -- les deux étant indispensables au progrès de l'ODL.

Les experiences de Suède et Norvège, plus articulées et approfondies parmi celles presentiés, analysent dans le détail la politique nationale en matière de technologies éducatives et examinent le contexte où elle a évolué, en proposant de developper une évaluation comparée des initiatives developpées dans different Pays.

Les cas islandais présente enfin le programme entamé par le Ministère de l'Éducation Nationale en matière d'Éducation à Distance (Distance Education). Le programme, qui est actuellement en cours, vise à développer un offre étendu dans le domaine de l'ODL adressé aux écoles secondaires supérieures du système d'éducation islandais.

Les cas présentés dans cette sections sont aussi disponibles sur la web-conférence.

L'objectif des partenaires du projet ODL Policy Seminar consiste à intégrer périodiquement la récolte en rendant permanente la web-conférence.

FICHE D'IDENTIFICATION DU CAS DE POLITIQUE ODL

Titre: _____

Sous-Titre: _____

Mots-clé: _____

Type: ☐ Politique ☐ Programme ☐ Action

Niveau:
- ☐ Transnational: Structure _____
- ☐ Union Européenne: Type _____
- ☐ National: Pays _____
- ☐ Régional (terminologie UE): Région _____
- ☐ Local: Nom _____

Objectifs engendrés par la Politique:
- ☐ Spécifiquement ODL
- ☐ Éducation et formation
- ☐ Développement régional
- ☐ Applications télématiques
- ☐ Marché du travail
- ☐ Industrie Multimédia
- ☐ Politique sociale
- ☐ Compétitivité progressive
- ☐ Efficacité en termes de coûts/meilleure performance des investissements
- ☐ Autre: _____

Acteur(s) clé: 1 _____
2 _____
3 _____

Résumé: _____

Sources disponibles sur le réseau URL: _____

Sources disponibles en papier: _____

Personne contactée:

Prénom: _____ Nom: _____

Institution: _____

Courrier électronique: _____

Téléphone: _____ Télécopieur: _____

Adresse (Rue/Avenue):

Code postal: _____ Ville: _____

Pays: _____

Résultats disponibles? (Compositions, évaluations, relations):

- ☐ Non prévus sous peu ____/____
- ☐ Uniquement expériences personnelles: Personne(s): _____
- ☐ Oui: _____

DESCRIPTION DE L'ÉTUDE DE CAS DE LA POLITIQUE ODL

1. **Titre:** _____
2. **Pays:** _____
3. **Milieu:** _____
4. **Milieu de référence et objectifs (sources juridiques, nature/contenu, niveau institutionnel, objectifs primaires et spécifiques):** _____
5. **Envergure de l'investissement:** _____
6. **Durée:** _____
7. **Description et Application de la Politique/du Programme/de l'Action:**[1] _____
8. **Veuillez préciser le contenu politique implicite ou explicite de chaque programme ou préciser la mesure:**

   Contenu politique explicite: _____

   Contenu politique implicite: _____

   Contenu politique: ☐ bas (portant sur des dimensions et sur des problèmes techniques) ☐ haut
9. **Bénéficiaires directs:** _____
10. **Bénéficiaires indirects:** _____
11. **Intégration avec d'autres politiques/mesures/programmes:** _____
12. **Résultats et échecs principaux** _____
13. **Critères du succès et évaluation de la performance de l'initiative:** _____
14. **Probables développements/plans futurs:** _____

En décrivant l'étude de cas, veuillez tenir compté des facteurs suivants, qui pourraient influencer le processus de prise de décision (decision making) et le succès de l'initiative:

- Facteurs de la motivation générale (où on réalise l'initiative)
- Facteurs de la motivation politique spécifique (rationalisation du système existant, réduction des coûts, etc.)
- Facteurs historiques
- Système juridique et financier
- Relation institutionnelle et concernant l'interorganisation
- Contexte infrastructural (structure technologique et/ou humaine existante, services d'information)
- Contexte socio-économique démographique
- Contexte culturel
- Influence des motivations individuelles de ceux qui sont impliqués par le processus de policy making
- Une ligne de ´prestige», des tendances à imiter, des facteurs de pouvoir, associés aux principales motivations politiques, économiques et sociales, peuvent influencer le choix d'un certain type de politique par rapport à un autre.

[1] Une **Politique** est caractérisée par une série cohérente d'objectifs et de priorités, par une longue durée et par une allocation constante/fixe des ressources.
Un **Programme** est un mécanisme pour le démarrage d'une action visant à influencer certaines dimensions spécifiques ou à atteindre des objectifs politiques. Il peut être considéré en tant qu'un instrument pour appliquer une politique plus vaste (par exemple le livre blanc, le Mémorandum de l'Union Européenne ou les programmes Leonardo da Vinci, Socrates, COMETT, etc.).
Une **Mesure** est une action spécifique (un volet d'un cycle d'actions) qui peut être définie en termes de temps/durée, ressources allouées, contenus (par exemple le soutien à la mobilité des étudiants universitaires dans le cadre du programme Socrates).

1. Titre: ***Fjarkennsla Verkmenntaskólans á Akureyri - Programme d'Éducation à Distance de l'Akureyri Vocational / Instruction Obligatoire en Islande.***

Agusttsson Haukur - **Verkmenntaskolinn a Akureyri** - hag@smennt.is

2. **Pays:** **Islande**
3. **Milieu:** Des niveaux de l'école secondaire aux niveaux post-secondaires - Formation humaniste et professionnelle
4. **Sources Juridiques:** Ministère de l'Éducation Islandais
5. **Nature/Contenu:** Formation humaniste et professionnelle
6. **Niveau institutionnel:** Des niveaux de l'école secondaire aux niveaux post-secondaires
7. **Objectifs (primaires et spécifiques):**
   Pourvoir d'un large offre de formation les différents niveaux de l'école secondaire et post-secondaire afin de favoriser le franchissement des examens d'inscription et d'obtenir une maîtrise dans de différents domaines professionnels
8. **Envergure de l'investissement:** Investissement spécifique très réduit
9. **Durée:** En cours - chaque segment correspond à un semestre
10. **Description et Application de la Politique/du Programme/de l'Action[2] :**
    Le programme consiste en un système de formation et d'enseignement concernant une vaste gamme de sujets. Il est réalisé complètement sur un support informatique et en utilisant le matériel d'enseignement traditionnel, disponible principalement sur papier, d'où le système éducatif islandais se sert en général. La politique est décidée pour la plupart par Verkmenntaskolinn à Akureyri, responsable de la gestion du programme. Son objectif consiste à incorporer le plus grand nombre de domaines d'étude et à s'adresser à un nombre de personnes toujours croissant.
11. **Veuillez préciser le contenu politique implicite ou explicite de chaque programme ou préciser la mesure:**
    Contenu politique explicite: Le développement d'un large offre à niveau de la formation vise en général à fournir au public des sujets qui font l'objet de l'enseignement à l'intérieur du système éducatif islandais au niveau secondaire et post-secondaire.
    Contenu politique implicite: Hausser le niveau éducatif de la nation afin de la rendre plus compétitive dans le domaine international, outre à favoriser les possibilités pour l'apprentissage continu tout o long de la vie.
    Contenu politique: ☐ bas (portant sur des dimensions et sur des problèmes techniques) ☒ haut
12. **Bénéficiaires directs:**
    Les personnes qui souhaitent passer les examens afin d'accéder à l'université ou bien acquérir un statut dans ledomaine professionnel.

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[2] Une **Politique** est caractérisée par une série cohérente d'objectifs et de priorités, par une longue durée et par une allocation constante/fixe des ressources.
Un **Programme** est un mécanisme pour le démarrage d'une action visant à influencer certaines dimensions spécifiques ou à atteindre des objectifs politiques. Il peut être considéré en tant qu'un instrument pour appliquer une politique plus vaste (par exemple le livre blanc, le Mémorandum de l'Union Européenne ou les programmes Leonardo da Vinci, Socrates, COMETT, etc.).
Une Mesure est une action spécifique (un volet d'un cycle d'actions) qui peut être définie en termes de temps/durée, ressources allouées, contenus (par exemple le soutien à la mobilité des étudiants universitaires dans le cadre du programme Socrates).

13. Bénéficiaires indirects:

Les personnes qui souhaitent étendre leur connaissance relativement à des sujets spécifiques qui sont enseignés au niveaux de l'école secondaire et post-secondaire.

14. Intégration avec d'autres politiques/mesures/programmes:

Le programme est complètement intégré dans le système éducatif islandais et il a aussi des liaisons formelles avec l'instruction universitaire islandaise.

15. Résultats et échecs principaux:

Le programme progresse très rapidement et s'adresse à un nombre de plus en plus croissant d'islandais aussi bien à l'intérieur du pays qu'à l'étranger. Le potentiel de croissance n'est pas épuisé; les limites principales sont de type financier et organisationnel.

16. Critères du succès et évaluation de la performance de l'initiative:

Les critères ont été formulés essentiellement moyennant une comparaison entre le succès et la performance des personnes et des groupes dans le cadre du programme d'un côté et le succès et la performance des personnes et des groupes dans le cadre du système d'éducation traditionnel de l'autre. Dans cette comparaison, le Programme d'Éducation à Distance de Verkmenntaskolinn à Akureyri, réalisé en partie par des organismes extérieurs, a obtenu des résultats satisfaisants.

17. Probables développements/plans futurs:

Analyse des Points Forts, des Points Faibles, des Opportunités et des Dangers: les points forts du programme sont sa flexibilité et sa simplicité. Les points faibles concernent surtout l'aspect financier. Les possibilités qui n'ont pas encore été exploitées pour l'application des méthodes utilisées dans le programme paraissent être encore nombreuses.

Les danger pour le progrès et le développement du programme paraissent être, comme on l'avait déjà souligné, principalement de type financier, concernant l'embauche de personnel.

18. Probables développements/plans futurs:

Actuellement il paraît assez probable que le programme puisse s'étendre remarquablement aussi bien en ce qui concerne le nombre des étudiants et du personnel, qu'en ce qui concerne le nombre de sujets présentés et de maîtrises disponibles. Les programmes futurs devront permettre au programme de devenir de plus en plus flexible et diversifié en utilisant les technologies avancées dans le cadre de la communication entre ordinateurs; on devra pourtant assurer en même temps, aussi souvent que possible, que le programme n'excède pas le domaine de capacités des usagers des ordinateurs, pour lesquels le service doit être constamment disponible.

- *Facteurs de la motivation générale*: le Programme a été amorcé, comme on l'a remarqué, sous les auspices du Ministère Islandais de l'Éducation. Il est encore dans une phase expérimentale qui va continuer jusqu'à la fin de l'année 1998. On a réalisé systématiquement une promotion assez réduite auprès du publique et des entités gouvernementales en dehors du Ministère de l'Éducation. Le programme a progressé de façon hétérogène. Son développement semble être dû principalement au succès général du programme en termes de scolarisation adressée à des personnes qui n'auraient eu aucune possibilité ou qui auraient eu des possibilités limitées d'accès à la scolarisation par d'autres modalités d'enseignement.
- *Facteurs de la motivation politique spécifique*: dans un certain sens le système a montré son utilité par rapport au système éducatif traditionnel existant. Grâce à ce programme, de nombreux étudiants d'écoles du même niveau de Verkmenntasskolinn à Akureyri ont été à même d'achever leurs études dans les écoles locales en suivant les cours individuels faisant partie du programme. Ainsi a-t-on offert des possibilités à un prix inférieur aux écoles et aux étudiants concernés. Le prix du cours, du logement, de l'équipement et des aspects techniques a été assez réduit. Dans ce contexte on a remarqué que le programme représente l'institution pour l'éducation la moins onéreuse en Islande.
- *Facteurs historiques*: le programme a débuté dans le semestre du printemps de l'année 1994. Seulement un groupe limité d'étudiants ont participé au programme à l'époque. Au début le

programme comprenait deux cours, étant donné qu'il s'agissait d'une expérience pour vérifier si les méthodes proposées étaient réalisables; les ressources financières étaient pratiquement inexistantes et le personnel était formé par un enseignant et par un technicien qui travaillait à mi-temps sans aucune rétribution. Depuis lors le programme s'est accru jusqu'à offrir 78-80 cours et 30-35 sujets; le personnel enseignant compte aujourd'hui 40 personnes, aussi bien internes qu'externes à l'école, et le nombre des étudiants inscrits au début du semestre actuel dépasse les 260 élèves, aussi bien Islandais qu'étrangers.

- *Système juridique et financier*: le programme est géré en respectant entièrement les directives issues par le Ministère Islandais de l'Éducation en ce qui concerne les sujets, la provision, les tests et les horaires. Les étudiants payent pour recevoir l'éducation. Leurs payements devraient couvrir un tiers des coûts de l'enseignement. L'État fournit les deux autres tiers. L'État (ministère de l'éducation) a affecté des sommes modiques pour améliorer l'infrastructure technologique à l'intérieur de Verkmenntaskolinn à Akureyri. Les équipements ne sont pas utilisés exclusivement pour le programme d'Éducation à Distance, mais aussi pour d'autres activités concernant l'école. Une rétribution à mi-temps a été pourvue comme couverture des aspects administratifs et techniques.
- *Relation institutionnelle et concernant l'interorganisation*: le Programme d'Éducation à Distance Verkmenntaskolinn à Akureyri constitue pour la plupart un programme isolé. Un accord a été disposé avec l'Université d'Akureyri pour la coopération concernant les problèmes liés aux technologies informatiques et à la communication par ordinateur et touchant aux questions de l'éducation à distance. Cet accord a été réalisé en collaboration étroite avec le Ministère Islandais de l'Éducation.
- *Contexte infrastructural (structure technologique et/ou humaine existante, services d'information)*: comme on l'a déjà souligné précédemment, le programme est réalisé entièrement moyennant la communication par ordinateur. L'infrastructure technologique est donc composée par les ordinateurs disponibles chez Verkmenntaskolinn à Akureyri, par les ordinateurs de chaque enseignant et par le logiciel nécessaire à la communication et au travail sur les sujets qui sont l'objet de l'enseignement. Il s'agit principalement de machines ordinaires et de logiciels pour l'enseignement. L'infrastructure humaine est constituée par le personnel enseignant, par un administrateur et par un technicien. Ces derniers sont complémentés et assistés par les administrateurs de Verkmenntaskolinn à Akureyri et par le personnel de bureau
- *Contexte socio-économique démographique*: nous sommes de l'avis que le Programme d'Éducation à Distance de Verkmenntaskolinn à Akureyri fournit un service valable aux personnes qui y ont accès. Le développement du programme ne semble indiquer rien d'autre. Dans ce contexte il vaut peut-être la peine de rappeler que la population totale de l'Islande est de 260.000 personnes, ce qui fait que le programme d'éducation à distance de Verkmenntaskolinn à Akureyri intéresse un habitant sur mille du pays.
- *Contexte culturel*: comme on l'a remarqué en précédence, le but du Programme d'Éducation à Distance de Verkmenntaskolinn à Akureyri est d'améliorer le niveau de l'éducation dans le pays. Les méthodes utilisées permettent d'atteindre des personnes qui se trouvent dans des zones éloignés ou des personnes qui, tout en résidant dans des communautés urbaines, ne peuvent pas accéder -- pour des raisons diverses -- aux écoles traditionnelles ou aux écoles fournissant des cours pour les adultes. Grâce au programme on essaye de fournir un moyen pour valoriser le niveau culturel et éducatif de la nation.
- *Influence des motivations individuelles de ceux qui sont impliqués par le processus décisionnel*: la motivation individuelle, aussi bien du personnel que des étudiants, a toujours été un élément décisif dans le développement du Programme d'Éducation à Distance de Verkmenntaskolinn à Akureyri. La réponse des étudiants et les idées développées par le personnel ont toujours été prises en considération et ont influencé les décisions dans le cadre du processus décisionnel politique.
- *Outre les principales motivations économiques, politiques et sociales, une série de tendances imitatives «prestigieuses» et des facteurs de pouvoir peuvent influencer le choix d'un certain type de politique par rapport à un autre*: nous sommes de l'avis que les tendances imitatives «prestigieuses» et les facteurs de pouvoir aient joué un rôle très limité dans le développement du Programme d'Éducation à Distance de Verkmenntaskolinn à Akureyri.

Titre ***Comment l'apprentissage va changer la politique et l'application des technologies del'information et de la communication dans les écoles suédoises.***

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0. Introduction

Ce document focalise l'attention sur les Technologies de l'Information et de la Communication (ICT) dans le système éducatif. Il vise à expliquer la composition, l'application et les effets de la politique suédoise. Le document concerne principalement le sujet du système scolaire, de ses conditions actuelles et de sa situation pendant ces dernières années. Depuis longtemps on a souligné, surtout au niveau national, les ICT et l'utilisation des ordinateurs dans l'école.
Entre 1984 et 1991 de considérables investissements ont été réalisés dans la technologie: on a introduit des ordinateurs et des logiciels dans les écoles pour un total d'environ 120 MECU. L'éducation des enseignants, ainsi que les projets concernant l'aspect éducatif, n'ont pas été pris excessivement en considération; les effets et les investissements ont été inférieurs. On examinera cette question brièvement dans la section «3» de ce document.
L'instruction obligatoire en Suède débute à partir de six ans. À cet âge les enfants peuvent fréquenter aussi bien une classe préparatoire que l'école primaire. Actuellement le choix plus fréquent est de sélectionner les itinéraires moyennant une classe préparatoire. La durée de l'école primaire est de six ans, celle de l'école secondaire de trois ans.
À environ 98%[3] des élèves poursuivent leurs études en s'inscrivant à un cours universitaire. Ils peuvent choisir parmi seize différents programmes nationaux. Des informations plus détaillées sur le système scolaire suédois peuvent être repérées sur la banque de données Eurydice. [4]
Dans la période 1995/96 le nombre d'élèves était de 312.400 et le rapport en moyenne enseignant/élèves était de 6,9 sur 100 élèves. [5]
Pendant l'année universitaire 1994-95 on comptait 270.000 étudiants universitaires *full-time equivalent* environ; à peu près 30% des jeunes s'inscrivent à l'université après avoir achevé l'instruction obligatoire. [6]
L'objectif ambitieux du Ministère de l'Éducation prévoit que dans l'avenir 50% des Suédois s'inscrivent à une forme ou une autre d'éducation universitaire avant d'atteindre l'âge de 28 ans. Donc on s'attend beaucoup de ce système universitaire. L'Éducation à distance et les ICT sont considérées les principaux facteurs de développement du «niveau tiers» grâce auquel on peut concrétiser ces attentes.

1. Les problèmes

De nombreux acteurs influencent actuellement les manières dans lesquelles les ICT sont aperçues et utilisées dans les écoles suédoises. Ce document va présenter brièvement quelques uns des acteurs principaux qui font partie des institutions douées d'un certain pouvoir dans le cadre du système scolaire ou qui disposent de ressources financières suffisantes à leur permettre d'influer sur le système. Bien que les stratégies développées au sein de la Commission Européenne et du Conseil Nordique aient une importance considérable, elle ne seront pas examinées dans ce document. On décrira pourtant succinctement l'une des formees de coopération des pays nordiques, IDUN, car celle-ci concerne les enseignants et les programmes de formation adressés aux enseignants.

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3 La statistique décrit la situation de l'année 1996.
4 http://europa.eu.int/en/comm/dg22/struct/sweden.doc
5 Swedish Ministry of Education and Science: The Swedish Education System. Août 1997.
6 Voir note 3.

1.1 *L'origine de la politique*

La Suède a vécu récemment un processus de changement conséquent à la forte décentralisation du système scolaire. Depuis 1991 le contrôle gouvernemental qui a créé d'importantes responsabilités au niveau local a été remplacé par un système orienté vers les objectifs. Aujourd'hui l'organisation et le personnel des écoles relèvent des autorités locales, ainsi que l'allocation des ressources. Les principes constitutifs et les objectifs éducatifs, dont on s'attend à ce que les écoles y adhèrent, sont mis en relief par le Parlement et par le Gouvernement dans l'acte législatif concernant l'éducation et dans un curriculum national. Actuellement le contenu éducatif des écoles suédoises est déterminé aussi par les décisions relatives au chiffre minimum d'heures attribuées à chaque sujet pendant une certaine période de temps. Le cadre de référence est le même pour toutes les écoles du pays, aussi bien municipales que privées, et il vise à garantir les mêmes opportunités de formation, indépendamment de l'organisation de l'école ou de son emplacement dans le pays. L'informatique (Computer Science) n'est pas encore un sujet de l'école primaire et secondaire, mais elle est toutefois intégrée dans d'autres manières.
Un instrument important qui permet au *Gouvernement*[7] d'influer sur la société suédoise est représenté par la Commission IT.[8] Instituée en 1994, elle vise à encourager l'utilisation des technologies de l'information en Suède.
La Commission était présidée par le Premier Ministre et au moins six ministres participent activement au projet. Pendant cette même année on a publié le document politique «Technologie de l'Information - Wings to Human Ability»[9], qui inclut des recommandations pour le déroulement d'actions spécifiques. Au début de l'année 1994 le Parlement a décidé de créer une *Fondation pour le développement des connaissances et des compétences*[10] qui, pour le déroulement de son travail, se fondait sur les recommandations de la Commission; l'une de ses tâches principales consistait à promouvoir l'utilisation des ICT grâce à d'importants investissements.
Après les élections, le nouveau Gouvernement a institué une deuxième Commission IT (1995), cette fois-ci comprenant un seul ministre. Sa tâche a demeuré celle d'encourager et de transmettre les connaissances liées aux possibilités offertes par les ICT au développement social. En outre, la Commission devait aussi, par exemple, conseiller le Gouvernement dans l'élaboration de stratégies en matière d'ICT et dans le développement d'actions visant à promouvoir l'utilisation de ces technologies. Avec le changement de Gouvernement en mars 1996 on a institué une troisième Commission, transférée du Conseil de Cabinet au Ministère des Transports et des Communications, dont le Ministre est devenu le nouveau président de la Commission (mandat: jusqu'au 31 mai 1998). Le travail de la commission se focalise sur trois problèmes principaux:

- Comment est-ce que l'utilisation des technologies de l'information (IT) peut contribuer à la croissance de l'emploi.
- Comment la disponibilité des IT peut-elle être accrue indépendamment de l'emplacement, du niveau d'instruction et du sexe.
- Comment peut se développer le contexte futur, quelles sont les conséquences de l'utilisation des IT et quelles sont les décisions stratégiques qu'on devra prendre.

Une description plus détaillée du travail de la Commission est contenue dans une relation publiée en 1997, Sweden in the Information Society. [11]

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7 Site Web: http://www.rosenbad.se
8 Site Web: http://www.itkommissionen.se
9 SOU1994:118 Information Technology-Wings to Human Ability. Stockholm: Alfa Print (Site Web: http://www.itkommissionen.se)
10 Site Web: http://www.kks.se
11 SOU 1997:597 Sweden in the Information Society. The Swedish IT Commission Report 5/97. Stockholm: Graphic Systems AB. (Site Web: http://www.itkommissionen.se)

Un autre exemple d'action entreprise par le Gouvernement correspond à l'institution du *Conseil des Jeunes pour les IT.* [12] La tâche principale du Conseil est de promouvoir l'utilisation de la Technologie de l'Information parmi les jeunes - dans l'éducation, dans le temps libre, et ensuite dans le marché du travail. Le Conseil a été établi pour discuter de la société de l'avenir du point de vue des jeunes et pour favoriser l'adaptation à l'évolution vers une société future fondée sur l'utilisation des IT.

Le Conseil des Jeunes pour les IT est formé par sept jeunes (garçons et filles) âgé entre 15 et 29 ans. Du début, au lieu de s'adresser à des experts, le Conseil s'est occupé essentiellement d'essayer de comprendre ce que pensent les jeunes des IT, leurs idées sur la question et sur leur même avenir.

Par des rencontres, des conversations et des débats, le Conseil a dressé un cadre exhaustif illustrant la perception des jeunes et la façon où ils aimeraient développer la société.

La *Commission sur l'Éducation à Distance*[13] s'intéresse en outre du niveau d'utilisation des ICT. En 1995 le Gouvernement a composé un groupe d'experts et les a chargés de rechercher une stratégie pour favoriser l'utilisation de l'éducation à distance soutenue par les ICT; le gouvernement les a aussi chargés de réfléchir sur le rôle joué par la Société de la Télévision dans le système éducatif du futur. La Commission sera engagée pendant trois ans et elle disposera de ressources nécessaires à la gestion des projets et à l'évaluation des activités.

Les frontières entre les formes traditionnelles d'éducation et le formes d'éducation à distance vont s'atténuer de plus en plus. Le travail accompli sur le terrain et les recommandations de la Commission ont et vont avoir un impact concret sur l'utilisation des ICT au sein du système scolaire suédois.

Sans aucun doute l'*Agence Nationale pour l'Éducation*, [14] qui depuis l'année 1991 à remplacé le National Board of Education et qui devrait acquérir une vaste connaissance du système éducatif, est très importante. Le National Board a été un acteur-clé du système centralisé; l'Agence Nationale doit donc pouvoir faire en sorte que le développement des écoles suédoise aille dans la direction des objectifs établis par la politique de l'éducation nationale. Au sein de l'Agence Nationale pour l'Éducation on a institué une unité pour les ICT composée par vingt membres chargés de soutenir l'Agence en favorisant l'utilisation des ICT et, plus important, responsables des activités nationales d'application et d'utilisation des ICT dans les écoles. L'Agence Nationale suit en parallèle les changements concernant l'utilisation des ICT dans les écoles.

Le *Swedish National Board for Industrial and Technical Development* (NUTEK) [15] est l'organisation promotrice des ICT. Entre autres, le NUTEK constitue une importante liaison entre les actions entreprises au sein de l'Union Européenne et les activités accomplies par les différentes organisations du secteur de l'éducation en Suède, aussi bien qu'entre les entreprises particulières et les activités susmentionnées.

Le dernier acteur énuméré est *Telia*. Il s'agit du Ministère national des Postes qui a été transformé en entreprise à partir d'une organisation publique.

L'entreprise appelée «Telia's Global School»[16] est chargée spécifiquement de réaliser les enquêtes dans les écoles. L'une des branches de l'activité de cette entreprise concerne les projets qui utilisent les technologies audiovisuelles pour la communication en temps réel entre les écoles et les autres organisations.

Un autre secteur concerne la communication avec les banques de données contenant des produits et des instruments multimédia interactifs. Un troisième domaine d'activité consiste à promouvoir et à soutenir la production de nouvelles typologies d'assistance pour l'enseignement du genre interactif et basées sur les ordinateurs.

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12 Site Web: http://www.ungit.se
13 Site Web: dukom.hadar.ideon.se
14 Site Web: http://www.skolverket.se
15 Site Web: http://www.nutek.se
16 Site Web: http://www.skolinternet.telia.se/lerofond/

1.2 *Les thèses de la politique*

Bien que les différentes organisations qui influencent le processus de policy making décrites en précédence aient des points de départ différents, les thèses communes concernant la politique sont pourtant nombreuses. La Commission des Technologies de l'Information (IT) a demandé à treize Suédois – des leaders industriels, des chercheurs et des politiciens – de présenter leur vision du futur et d'indiquer comment on peut s'insérer dans le nouveau scenario[17]. Les différents problèmes mis en évidence reflètent les thèmes à la base de la politique liée à l'ICT.

Au cours d'environ un siècle la Suède, qui était une société principalement agricole, est devenue une société du consommation fondée sur la production industrielle. Les treize personnes qui «regardent dans le globe de verre» considèrent que la Suède est en train de se diriger vers une nouvelle époque. Une société qui ne se présente pas comme l'étape suivante ou la conséquence de la société industrialisée, mais comme quelque chose de complètement nouveau qui est peut-être en train de s'éloigner de la société industrielle.

L'industrie suédoise a engendré richesse et beaucoup de structures sociales constituent le support grâce auquel l'industrie a pu fonctionner pendant un siècle. Ces structures peuvent représenter un obstacle au franchissement à une nouvelle époque. Un industriel a affirmé qu'alors que dans les années 80 à une personne il fallait 50 minutes pour assembler un aspirateur, en 1997 il lui faut 0 minutes. Cela entraîne des conséquences remarquables pour beaucoup de systèmes, y compris l'école.

La société hétérogène, non pas celle homogène, va offrir des avantages dans l'avenir. Les structures gagnantes seront construites à partir des individus plutôt que sur les groupes, en augmentant la demande relative à chaque personne.

Sur la base de ces considérations il paraît évident que chaque individu va constituer un point-clé pour la Suède. L'objectif de l'équité est un élément sur lequel tous les partis politiques sont d'accord: il sera fondamental de définir des politiques et des stratégies capables d'offrir des opportunités équivalentes aux deux sexes, aux personnes qui viennent de côtés différents du pays, de personnes d'une classe sociale différente ou personnes qui ont des qualification différentes. Tout le monde, et non seulement une élite, devra être en droit de participer dans la société nouvelle.

Un autre sujet de débat concerne le rapport entre le contexte social, le contexte régional et le contexte global. Le groupe d'experts a souligné que l'importance des nations diminue, un point sur lequel on discute largement au sein du Conseil des Jeunes pour les IT. Le Conseil a décrit une vision de la société du futur en tant qu'une société «glocal», où les personnes vivent dans un milieu local sur une petite échelle mais elles travaillent dans un milieu global sur une grande échelle. Les IT permettent de concrétiser ce paradoxe.

Le Conseil des Jeunes pour les IT a identifié, parmi ses activités, un certain nombre d'indicateurs liés à un scénario concernant la société de demain.

Il s'agit d'opérations sur le réseau, de l'expansion du secteur des services, de la chute de la hiérarchie, de procès sociaux dynamiques, de 'voice-exit» et d'apprentissage continu: 'locale + global = glocal». C'est uniquement en observant les signaux des temps qu'on peut gouverner le développement de la société 'glocal».

Conformément aux scénarios et aux prévisions développées par les différentes organisations qui influencent le processus de policy making, quelques-unes d'entre elles analyseront les conséquences pour le système scolaire. En feuilletant les publications récentes, on pourra remarquer que le Conseil des Jeunes pour les IT a élaboré des documents différents concernant l'école. La description suivante est tirée du rapport du Conseil Mega Change.[18]

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[17] SOU 1997:31 Kristallkulan - tretton röster om framtiden. IT-kommissionens rapport 3/97. Göteborg: Graphic Systems (The Crystal Ball - thirteen voices about the future) (Website: http://www.itkommissionen.se)

[18] SOU 1996:181 Mega Change - La vision de la Société du futur. Gothenburg: Graphic Systems AB. (Site Web: http://www.ungit.se) Les synthèses en Anglais sont disponibles dans le Site Web.

Tous les étudiants ont le droit de posséder des connaissances relatives aux technologies de l'information et d'acquérir familiarité avec celles-ci grâce au système éducatif. Cela implique que les étudiants peuvent accéder aux technologies, que l'ordinateur constitue une partie intégrante du système de soutien et de tutoring, que les méthodes d'enseignement changent et, enfin, qu'on assure les opportunités requises par rapport aux étudiants afin qu'ils puissent comprendre le fonctionnement de la technologie.

Le développement continu des compétences individuelles – l'apprentissage continue tout au long de la vie – est une condition requise par la société future. L'école doit donc donner à chaque individu la capacité de développer ses compétences au cours de la vie. Le défi principal concernant l'apprentissage continu est représenté par la mise au point d'un système capable d'identifier, d'interpréter et d'évaluer les informations.

L'école continue dans son œuvre de préparation des étudiants pour une société industrielle fondée sur la hiérarchie, ce qui équivaut évidemment à une préparation réduite par rapport à une économie ou le réseau joue un rôle fondamental. L'éducation doit viser à transformer les élèves et les étudiants en producteurs et non pas en consommateurs de savoir. On devrait encourager un processus dans lequel les étudiants ne sont pas uniquement à la recherche de réponses, mais disposent aussi de la formation qui leur permet de préciser les questions de relief et de réfléchir sur d'éventuelles réponses alternatives. Afin de favoriser ce processus il faut que les enseignants et les étudiants puissent agir librement dans le planning de leurs activités.

L'école ne doit pas être séparée de la société mais, au contraire, elle devrait consentir d'exécuter une partie plus consistante du travail à l'extérieur du contexte scolaire; les écoles devraient être ouvertes afin de permettre l'interaction entre étudiants et travailleurs, et elles devraient se transformer en centres pour le développement de compétences et en points de rencontre pour les différentes générations. Cela peut être réalisé, par exemple, en créant une médiathèque à l'intérieur de l'école.

L'activité de l'école doit être amplifiée afin de répondre aux nouvelles exigences de connaissance en produisant une plus grande flexibilité dans les structures, par exemple en plaçant les ordinateurs dans de différentes salles dans les écoles au lieu de les assembler dans une seule pièce.

L'école devra adopter une approche holistique par rapport à la connaissance. Cela signifie que l'activité sectorielle, divisée par sujets, va diminuer en faveur d'un enseignement fondé sur les domaines thématiques. Un nombre toujours plus grand de personnes devra obtenir une éducation universitaire afin de satisfaire les demandes de la «société glocal»; par conséquent les universités devront évoluer graduellement afin de pouvoir offrir des cours et des programmes traditionnels et à distance.

Les institutions qui s'occupent de la formation des enseignants doivent s'assurer que les nouveaux enseignants acquièrent les compétences nécessaires concernant les nouvelles technologies et les nouvelles méthodes d'enseignement. Ces institutions doivent aussi jouer un rôle-clé dans la formation des enseignants qui sont actifs du point de vue professionnel.

La notion d'«enseignant» englobe la notion d'«enseignement». Ce n'est pas l'enseignement la principale fonction demandée aux enseignants dans l'avenir. Le rôle des enseignants va se modifier: les enseignants deviendront des guides et des facilitateurs. Par conséquent les connaissances fondamentales de l'enseignant devront être de type pédagogique.

La catégorie professionnelle des enseignants va très probablement se transformer en une catégorie professionnelle de pédagogues et on introduira la formation pédagogique afin d'assurer la qualité de la mise à jour professionnelle et le développement du rôle professionnel. Les cours de formation doivent ainsi devenir des cours de formation en didactique englobant des aspects de plus en plus importants de pédagogie et de didactique.

Le Conseil des Jeunes pour les IT est aussi de l'avis que chaque enseignant doit posséder un ordinateur. L'objectif est en effet d'encourager les enseignants à accepter la nouvelle technologies et à leur donner la possibilité de l'utiliser activement dans l'enseignement.

1.3 *La politique nationale est-elle un cadre de référence ou une directive rigide?*

Les politiques nationales constituent un cadre de référence pour les processus de changement en cours au sein du système scolaire.

2. Application, mécanismes et stratégies.

2.1 *Quels sont les mécanismes et les actions pour l'application des politiques?*

Au cours de ces dernières années on a publié en Suède un certain nombre de livres et de relations sur les ICT dont beaucoup proviennent des susnommées institutions influençant le processus de policy making.
La Commission a été particulièrement active à cet égard en publiant plusieurs documents contenant des suggestions adressées au gouvernement ou des présentations de la politique au grand public.
L'un des plus récents[19] est disponible en Anglais. Un autre document, qui est souvent cité et lu, est un projet de loi gouvernemental où on analyse les différentes actions visant à promouvoir l'utilisation des ICT.[20]
Les conférences représentent un exemple ultérieur de l'activité. La Fondation pour le développement des connaissances et des compétences, avec plusieurs autres institutions qui influencent le processus de policy making, ont organisé un congrès important en automne 1996 adressé au secteur de l'école. Les bénéficiaires directs étaient principalement les enseignants. L'idée était celle de fournir aux écoles de tous le niveaux l'opportunité de montrer leur capacité d'utilisation des ICT. Plusieurs groupes d'étudiants y ont participé afin de montrer de quelle façon ils avaient intégré les ICT dans leurs études. À l'occasion de la conférence on a publié un livre illustrant les différents projets[21]. Dans l'avenir cette conférence aura lieu chaque année ou tous les deux ans. Ces conférences, qui représentent d'abord un excellent exemple, visent à créer des liaisons entre les enseignants.
La tâche de l'Agence Nationale pour l'Éducation est d'encourager le développement des écoles au niveau national. En particulier, on s'attend que l'Agence focalise ses efforts dans la formulation et dans le développement des objectifs et des philosophies des documents base de l'éducation tels que le programme d'études, ses objectifs et les critères d'évaluation correspondants. L'Agence s'occupe de fournir un soutien au développement dans le secteur de l'éducation et de la reforme en cours grâce aux informations, aux séminaires, au matériel de référence, aux réseaux, à la formation du proviseur, à l'évolution des compétences du personnel, etc. L'Agence soutient les projets locaux de développement qui sont importants au niveau national et qui devraient servir de modèle pour des développements pareils dans d'autres écoles.
Il existe une coopération étroite entre les pays nordiques par rapport à l'utilisation des technologies de l'information à l'école. La coordination de ce travail se déroule essentiellement au sein d'un projet avancé par le Conseil Nordique, IDUN.[22] Les domaines d'action auxquels on donne la priorité sont six:

- IT et politique de l'éducation
- Application (par exemple, informations, cours)

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19 SOU 1997:63 Sweden in the Information Society. The Swedish IT Commission Report 5/97. Stockholm: Graphic Systems AB. (Site Web: http://www.itkommissionen.se)

20 Proposition 1995/96:125 Åtgärder för att bredda och utveckla användningen av informationsteknik. (Activities for widening and developing the use of information technology.) (Activités pour amplifier et développer l'utilisation des technologies de l'information).

21 KK-stiftelsen (1996) Mot bättre vetande. Om IT och lärande. Stockholm: Nordstedts Tryckeri AB. (Website: http://www.kks.se) Swedish. Summaries covering the specific projects in English in the publication.

22 IDUN=Informationsteknologi och Datapedagogik i UndervisningeN (Information Technology and Computer Didactics in Education) (Technologies de l'Information et Didactique Informatique dans l'Éducation) Site Web: http://sofie.tic.dk/projekt/idun/

- Développement et échange de matériel didactique
- Open and distance learning
- Accès réciproque aux réseaux et aux logiciels
- Accords et problèmes de copyright concernant les logiciels, les banques de données et les réseaux

Les projets de développement sont assurément très importants pour l'application de la politique. Plusieurs institutions qui influencent le processus de policy making ont une fonction instrumentale dans ce sens, et elles disposent de ressources considérables pour financer le projet. Une caractéristique de relief de ces projets, qui est apparue au cours des dix dernières années, est liée au fait que ces projets sont de plus en plus formulés à l'intérieur des écoles/des communautés locales. Cela engendre, entre autres, l'exigence de lire les documents de la politique nationale. La articulation des propositions et la sélection des projets sont faites sur la base du critère qui se dégage de la politique. Actuellement les organisations mentionnées qui ont un impact considérable sont trois. Dans la prochaine section on décrit brièvement leurs actions.

2.2 *Sources de financement*

Comme on l'a mentionné dans l'introduction, les écoles suédoises sont financées par les autorités locales. Les ressources financières nécessaires aux investissements dans le domaine des ICT doivent être repérées au niveau local. Les écoles et le communautés, en articulant des propositions pour les projets de développement, peuvent obtenir des ressources additionnelles.

Actuellement et pendant les deux dernières années les financements ont été composés pour la plupart par les sources indiquées ci-dessous.

La Fondation pour le Développement des Connaissances et des Compétences a affecté 120 MECU environ pour soutenir le développement des ICT dans les écoles. Parmi ceux-ci, 9 MECU sont consacrés à la formation des enseignants et à 27 communautés, qui sont sélectionnées parmi 140 candidats ayant comme but fondamental la reforme du secteur scolaire locale. Le soutien donné par la Fondation couvre trois ans de travail de développement et, au total, 43 MECU, et on demande à chaque municipalité d'investir une somme au moins de la même envergure. Dans quelques cas les institutions locales ont prévu des sommes plus élevées. On suppose que la somme employée dans les 27 projets susmentionnés s'élève à 100 MECU. La Fondation finance actuellement 48 projets de développement plus réduits et elle va continuer à affecter des sommes dans ce secteur.

La Commission sur l'Éducation à Distance lance un avis de concours public. Pour des raisons économiques il est adressé aux institutions de la formation universitaire, aux systèmes pour la formation des adultes et pour les écoles secondaires out post-secondaires dans le domaine de l'ODL. La Commission a reçu environ 600 propositions. À la suite du processus de sélection, elle a distribué 12 MECU sur 100 projets. Les projets ont une durée d'un an et demi.

Telia's Global School dispose au total de 12 MECU à investir dans des projets de développement des différentes écoles. Jusqu'à présent ces fonts ont été employés pour financer 200 projets environ visant à produire du matériel adressé à l'enseignement et à l'apprentissage.

2.3 *Actions et problèmes concernant la formation des enseignants*

La formation des enseignants en Suède est intégrée depuis 1977 dans les institutions pour l'éducation universitaire. La culture et le contexte de formation des enseignants ont été graduellement influencées par cette intégration et le genre d'éducation qui se dégage est fondé davantage vers la recherche. Dans le système scolaire suédois largement décentralisé la formation des enseignants joue un rôle très important. Pour le gouvernement elle constitue une manière permettant d'exercer une influence sur les écoles.

Les objectifs nationaux orientent le contenu de la formation de l'enseignant. Les différents programmes de formation des enseignants passent de trois ans et demi à quatre ans et demi.

Un objectif additionnel, défini par le gouvernement, prévoit qu'à partir de l'année 1988 tous les enseignants acquièrent, grâce au cours de formation, les connaissances et les qualifications concernant l'utilisation des ordinateurs et des réseaux dans l'enseignement et dans l'apprentissage.[23] Ils doivent aussi posséder les capacités nécessaires pour développer le matériel didactique multimédia. Dans ce processus les enseignants sont les responsables et les instigateurs et leurs connaissances en matière d'ICT doivent donc être approfondies. Le gouvernement a affecté 2 MECU environ pour la formation des enseignants et à peu près 0,6 MECU pour soutenir cette initiative moyennant la recherche. Actuellement il n'existe pas de réponses définitives concernant la question de savoir si les changements dans la formation des enseignants sont en train de se diriger vers les objectifs définis. Il est assez probable que les étudiants vont atteindre ces objectifs, même si la formation des enseignants n'aura pas évolué dans les temps prévus. Les étudiants montrent en tous cas de posséder une certaine familiarité avec les ICT déjà au moment de l'inscription.

2.4 *Actions et problèmes concernant les ressources*

La Suède, tout comme la Nouvelle Zélande, les États Unis et la Suisse, destine des fonds considérables aux technologies de l'information (pour la Suède Å 2,5% du PIB). [24] Le résultat est que la Suède a la plus haute densité d'ordinateurs (PC) et de connexion à Internet du monde. [25] Une famille sur trois possède un ordinateur.
A peu près la moitié de ces ordinateurs a été achetée au cours des deux dernières années (des processeurs Pentium) et un troisième de ceux-ci est pourvu de la connexion à Internet.[26]
65% environ de la population entre 16 et 64 ans utilisent ou ont utilisé un ordinateur. En l'espace des 10 prochaines années le numéro de personnes ayant reçu une formation professionnelle impliquant l'utilisation de la technologie de l'information aura triplé. [27]
En 1996 80% des personnes nées entre 1974 et 1980 ont utilisé l'ordinateur régulièrement, 27% ont utilisé le modem, 37% les CD-ROM et 23% le portable.
Les statistiques concernant les nés entre 1947 et 1959 montrent que 67% d'eux ont utilisé l'ordinateur régulièrement, 23% le modem, 24% les CD-ROM et 54% le portable.[28]
Actuellement on ne dispose pas de nouvelles données statistiques et les données suivantes remontent à il y a un an et demi environ. Au niveau primaire et secondaire on compte un ordinateur tous les 19 élèves, alors qu'au niveau post-secondaire il y a un ordinateur tous les 8 étudiants. [29] Dans les régions rurales le total des ordinateurs est plus élevé par rapport à celui des principales villes. Il est aussi probable que ces données ne représentent pas correctement la situation.

2.5 *Mesures de soutien*

L'unité des ICT formée à l'intérieur de l'Agence Nationale est responsable de trois actions nationales visant à l'application et à l'utilisation des ICT dans les écoles.

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23 Proposition 1995/96:125 Åtgärder för att bredda och utveckla användningen av informationsteknik. (Activities for widening and developing the use of information technology.) (Activités pour amplifier et développer l'utilisation des technologies de l'information).

24 Information Technology Outlook 1995. OECD, Paris, 1996.

25 World Engineering Industries and Automation Performance and Prospects 1994-1996. UN, Geneva, 1996.

26 Statistique de Juillet de l'année 1997 présentée en Dagens Nyheter August 28, 1997.

27 Data om informationstekniken i Sverige 1996. Stockholm, Statistiska centralbyrån, 1996.

28 Österman, T & Timander, J. (1997) Internetanvändningen i Sveriges befolkning. Utvecklingen av attityder och användningen beträffande vissa tekniska hjälpmedel. Teldok rapport 115. Stockhol: Hj. Brolins Offset AB. (The use of Internet in the Swedish population.) (L'usage d'Internet dans la population suédoise).

29 Skolans datorer 1995. Stockholm: Skolverkets rapport 99.

En premier lieu, les unités sont chargées de la gestion et du développement du réseau télématique suédois, qui permet l'accès à Internet et à toutes les informations disponibles sur le réseau, qui offre aux écoles la possibilité de publier le matériel et d'interagir avec d'autres personnes et qui consent aux enseignants et aux étudiants d'accéder aux produits d'enseignement et d'apprentissage.
En deuxième lieu, les unités devront s'occuper de la création d'un Centre de ressources nationales pour la diffusion des instruments de soutien à l'enseignement fondés sur l'usage des ordinateurs. Les unités soutiendront en outre la production de produits multimédia et la propagation des connaissances dans ce domaine.
Sa troisième tâche consiste à créer un système de formation pour les enseignants, les étudiants et les parents, où les bénéficiaires peuvent acquérir la connaissance du système d'éducation selon les différents niveaux, par exemple connaître les normes qui gouvernent les écoles et les universités, les critères d'admission des différents programmes, les informations concernant l'offre éducatif spécifique dans le pays.

2.6 *Obstacles à l'intégration des ICT*

La plupart des organisations disposent d'une politique pour l'évolution de son avenir. Ces organisations formulent, d'habitude, une série d'objectifs dans un contexte de référence politique, et les stratégies pour atteindre ces objectifs impliquent dans une certaine mesure les ICT.
Introduire de nouveaux éléments dans une organisation ou changer la façon de travailler est une question assez laborieuse et complexe.
Dans les systèmes locaux, par exemple les écoles, tous les éléments du système interagissent et il est impossible d'introduire un changement dans une composante du système sans engendrer des changements chez les autres.
On devrait faire plus d'attention au fait que, dans la plupart des organisations, les ICT et leur utilisation représentent des éléments nouveaux. Un plus grand nombre d'ordinateurs dans les écoles ou de nouvelles méthodologies pour l'enseignement et l'apprentissage produisent l'exigence de structures de soutien nécessaires à l'application. Ces sources de soutien ont été divisées en trois catégories. [30]
La première catégorie concerne la technologie en soi, et elle inclut aussi le matériel (les câbles, les réseaux, les ordinateurs, les satellites, les télécopieurs, etc.) et le logiciel. La deuxième catégorie concerne au contraire les connaissances liées aux ICT et les attitudes conséquentes: comment utiliser les télécopieurs, les portables, les ordinateurs et le logiciel de différents types, mais aussi comment tenir compte de leur potentiel en tant qu'outils pour la solution de problèmes dans l'éducation, dans la recherche et dans l'administration. Evidemment les connaissances et les attitudes sont strictement liées et une conscience croissante de ces facteurs peut influencer les attitudes. La troisième catégorie concerne l'adaptation de l'organisation, de ses prescriptions et de ses règlements aux nouvelles technologies. En utilisant les ICT on peut conférer une dimension nouvelle au travail accompli au sein de l'organisation ou bien réduire d'autres phénomènes. Certains éléments qui n'existaient pas peuvent apparaître soudains, d'autres peuvent nécessiter de moins de temps et d'autres encore peuvent disparaître graduellement. Cela implique une adaptation des règles et des mécanismes dans la plupart des systèmes et elle peut aussi parfois inclure l'articulation de nouveaux modèles d'organisation du travail.
Afin de mettre en place les processus de changement qui comprennent les ICT il faut que ces trois mécanismes de soutien vital coopèrent. Les briques de ce processus de changements sont l'application de la technologie nécessaire, le développement des connaissances et des attitudes et l'adaptation ou la reforme de l'organisation du travail, des prescriptions et des règlements.

[30] Holmberg (1997) Vain triumphs. Relation du séminaire non-publiée.

Comme il se dégage de la description réalisée jusqu'à présent dans ce document, l'attention uniquement concentres sur une des briques susmentionnées implique des risques considérables.

3. Effets et résultats

À cause des différents processus de changement qui sont en train de se dérouler, actuellement on n'est pas à même de connaître les effets des investissements consistants réalisés à l'égard des projets récents. Les premiers investissements et les effets conséquents ont été analysés par Jadeskog, [31] qui s'était aperçu du cours oscillatoire de la société scolaire.
La première impulsion eut lieu au début de 1984. On changea le programme national (tous les étudiants des écoles supérieures devaient se familiariser avec l'utilisation de l'ordinateur) et les écoles pouvaient demander des fonds pour les investir dans l'achat d'équipements.
Une estimation relative à l'année 1987 a mis en relief l'achat de plusieurs ordinateurs; les étudiants disposaient en moyenne de moins de 25 heures de formation au cours des trois ans d'études supérieurs; les enseignants ne recevaient pas une suffisante formation en service.
La deuxième impulsion se vérifia quelques années plus tard (1989-1991). L'idée était celle de fournir une connaissance de base à tous les niveaux du système scolaire, national, régional et local. Parmi les objectifs on comptait aussi la tentative de changer le contenu et les modalités de l'enseignement et de l'apprentissage dans les écoles. En particulier, l'intérêt était adressé aux simulations fondées sur les ordinateurs, aux approches holistiques et au travail avec les enfants handicapés. Une évaluation réalisée en 1991 a mis en relief que les ordinateurs étaient utilisés pour des applications simples et les façons de travailler à l'école avaient demeuré essentiellement identiques par rapport à celles de la période où on n'utilisait pas d'ordinateurs. La plupart des enseignants étaient encore autodidactes alors que les connaissances sur l'utilisation des ordinateurs se répandirent et ceux qui s'étaient suffisamment familiarisés avec les ordinateurs n'avaient pas le rôle de tutor ou de mentor à l'égard de leurs collègues.
Les estimations les plus récentes, en 1994 et 1995, ont mis en évidence le fait que les enseignants, au lieu de travailler avec les ordinateurs et d'encourager leurs utilisations, s'acquittaient des autres tâches.
Les résultats des deux premières impulsions ont été évidemment assez limités. La première a été caractérisée par le fait de n'avoir atteint que quelques enseignants et les «garçons» qui avaient déjà montré un certain intérêt à cet égard. La deuxième impulsion a été trop agaçante à cause de la lenteur des ordinateurs, ce qui a encouragé sa sortie du domaine scolaire afin d'explorer le domaine extérieur. Les enseignants n'utilisaient pas d'ordinateurs dans leur activité éducative ou de planification. L'initiative comportant l'achat des ordinateurs était venue d'en haut et, tant bien que mal, les équipements ont été introduits dans les écoles. La deuxième impulsion atteint un nombre plus grand d'enseignants, et l'intérêt qu'elle avait suscité était, au début, plus élevé. Le processus d'attiédissement (cooling-off), d'après les enseignants, a été provoqué par un certain nombre de facteurs pratiques et psychologiques. Le nombre insuffisant d'ordinateurs, le fait de venir assemblés dans un labo et d'être «constamment» occupés ont été les raisons qui ont poussé les enseignants à douter de l'utilité des ordinateurs.
La troisième impulsion, l'impulsion actuelle, est celle qui est décrite et examinée dans ce document, et dont nous ne connaissons pas encore les effets. Les différences principales par rapport aux premières activités consistent dans l'emploi de fonds plus élevés et dans la concentration des ressources financières sur un nombre plus limité de projets définis. De plus la formation des enseignants représente un élément essentiel et dans beaucoup de cas les enseignants et d'autres personnes ont articulé eux-mêmes les projets au niveau local.
Ainsi, a-t-on assisté à la réalisation d'écoles complètement nouvelles, caractérisées par une nouvelle architecture, par des façons différentes de travailler, par l'absence de l'horaire

[31] Jedeskog, G. (1997) IT - Den tredje vågen. Paper presenterat vid NFPF:s kongress i Göteborg, 6-9 mars, 1997.

traditionnel, par la présence de groupes formés par personnes d'âges différents, par la coopération internationale. On a aussi assisté à la confusion, à l'anxiété et au malaise de beaucoup d'enseignants et de proviseurs dans l'attente de l'intervention de la part de structures extérieures. En quelques années on pourra savoir si celle-ci a en effet été une action convenable !

4. Suivi et évaluation

Plusieurs activités sont en cours afin d'assembler et d'analyser les données concernant le travail ordinaire dans les écoles, dans les actions de développement et dans les projets plus spécifiques. L'Agence Nationale pour l'Education joue à cet égard un rôle très important.
Le bureau principal de l'Agence à Stockholm est soutenu par une organisation qui opère directement et qui est présente en 11 différentes localités de la Suède.
Cette organisation à l'approche directe permet de mettre en évidence les indicateurs et les signaux concernant le système éducatif et d'évaluer les informations, d'analyser le matériel fourni par l'agence aux écoles et d'estimer sa qualité; l'organisation s'occupe aussi de propager les éléments et les données assemblés aux autorités locales et aux autres bureaux publiques. Elle fournit le matériel de base pour les analyses annuelles sur l'état des écoles suédoises et elle participe au monitorage général du système scolaire suédois.
Grâce au suivi continu des activités des écoles, l'Agence Nationale pour l'Éducation a acquis une connaissance étendue de tous les aspects du système scolaire suédois. Les données sont assemblées régulièrement par les autorités locales et elles indiquent le système d'organisation des écoles, leurs coûts et leurs résultats.
Ces données sont utilisées pour effectuer une analyse comparée, pour mettre en évidence les problèmes et pour stimuler le débat.
L'évaluation inclut des études approfondies et des analyses dans de différents domaines de l'éducation. Les domaines choisis pour cette étude peuvent relever des informations acquises par les activités de suivi, par l'évidence d'un certain genre de problèmes, du besoin de connaissances détaillées ou, par exemple, des effets des nouvelles réformes.
L'Agence Nationale pour l'Education ne réalise pas de programmes de recherche à son propre compte, mais elle met à disposition les fonds pour des projets de recherche qui, selon les attentes, peuvent fournir des informations récentes sur les conditions des écoles et sur les opportunités éducatives actuellement disponibles.
Cette recherche est d'habitude menée dans les universités ou dans les institutions de l'éducation supérieure. Au moment actuel, l'Agence donne la priorité à cinq domaines différents de recherche, dont aucun ne s'adresse principalement aux ICT.
L'unité spéciale pour les ICT à l'intérieur de l'Agence réalise des activités de suivi et de recherche qui sont orientées davantage vers les ICT. Sous l'en-tête «Skolans datorer» (Ordinateurs à l'école) ils vérifient la fourniture et les ressources en ordinateurs et en matériel en général. Jusqu'à présent, ils ont examiné la situation de l'année 1993 et de l'année 1995, alors que l'année 1997 va être leur troisième enquête. L'unité spéciale finance aussi deux activités de recherche, décrites par la suite.
Le programme de recherche ELOIS, «Elever, Lärare och Organisationer kring Informationstekniken i Skolan» (Les Etudiants, les Enseignants et les Organisations par rapport aux Technologies de l'Information dans l'école) est l'un des acteurs principaux dans l'évaluation des activités en cours.[32]
Le programme contribue aussi bien à l'unité ICT qui fait partie de l'Agence Nationale qu'à la Fondation pour le Développement de la Connaissance et de la Compétence.

[32] Le programme a été créé et géré par Ulla Riis, professeur d'Education à l'Université de Uppsala. La recherche a été conduite sous forme de coopération entre départements aux Universités de Uppsala et de Linkoping. Les collèges de Kalmar et de Dalarna ont également participé.

Le côté consacré à la recherche du programme financé par l'Agence Nationale est formé par deux éléments principaux. L'un d'entre eux, qui compte sur des ressources financières assez limitées, est pourtant en train de mener une enquête sur le champ. Cette enquête va se concentrer sur les effets que les expériences internationales de l'ICT ont sur l'organisation, sur l'enseignement et sur l'apprentissage dans le contexte scolaire.
Les résultats de l'enquête seront rendus publics au bout de l'année (en langue suédoise). L'autre élément indiqué est l'activité principale de ce côté du programme.
L'Agence Nationale parraine ELOIS pour examiner l'utilisation des ICT dans les écoles suédoises et les tendances depuis l'année 1996. Le résultat sera constitué par une série de relations annuelles sur l'état de l'évolution des écoles suédoises et un certain nombre d'études focalisées sur la manière où les ICT influencent l'organisation et le déroulement du travail des enseignants ainsi que l'apprentissage des étudiants.
La première relation a été publiée en 1977. [33] Elle contient les résultats d'une enquête réalisée sur un échantillon de 100 communautés suédoises. Beaucoup de questions concernant «La façon où l'apprentissage va changer» ont été soulignées et analysées dans la relation. Celle-ci présente aussi, par exemple, les politiques locales et les stratégies, la situation concernant les équipements et l'accès à Internet, les conséquences de l'emploi des ICT, la formation avancée des enseignants et les différences entre les différents types de communauté.
La partie plus étendue du travail au sein d'ELIOS au niveau national est consacrée au suivi de 27 projets financiés par la Fondation pour le Développement de la Connaissance et de la Compétence. Ces projets sont souvent liés à des institutions qui s'occupent de la recherche, comme il apparaît de l'évaluation de formation et de synthèse de chaque projet. Toutes les activités parallèles ont débuté pendant les années 1996 ou 1997.
ELOIS a examiné les propositions des communautés suédoises et des écoles et elle a aussi été chargée du processus de sélection des 27 projets.
D'autres données ont été repérées grâce aux interviews avec des personnes appartenant à de différents niveaux au sein des projets et à une enquête concernant les étudiants de six communautés.
La première relation a été publiée en 1997. [34]
Une troisième tâche importante actuellement en cours est représentée par l'évaluation des données sur les ICT par la Commission sur l'Education à Distance. Dans ce cas aussi, les procédés d'évaluation se déroulent suivant deux niveaux. Chacun des 100 projets environ utilise un évaluateur extérieur ou, dans certains cas, réalise une auto-évaluation.
On a mis au point un plan de référence national et général des notions et des sujets les plus intéressants. Sur la base de ce plan de référence les projets et les évaluateurs remettent les informations à un groupe national d'évaluateurs. Les relations en suédois[35] sur chaque projet sont disponibles depuis la fin de l'année 1997, ainsi que la relation nationale. La commission rédigera un rapport pour le Ministre en mai 1998. [36]

[33] Edström, R., u. et al. (1997) Information technology at School. A question of economy and pedagogy? A description of the state of the art in 97 Swedish communities. Uppsala University
[34] Riis, U., Jedeskog, G., et al (1997): Pedagogics, technology or Economy? Positioning of the Baselinein the School Development Projects financed by the Foundation for Knowledge and Competence Development. Uppsala University.
[35] Des synthèses en Anglais seront disponibles sur le site http://www.kks.knut.se
[36] Une version abrégée de la relation sera éventuellement publiée en Anglais.

1. Titre: ***FREENET FINLAND... un service ouvert focalisésur la collectivité pour les enseignants finlandais, les étudiants et les parents résident dans le pays.***

2. Pays: **Finlande**

3. Contexte de référence et objectifs (sources juridiques, nature/contenu, niveau institutionnel, objectifs primaires et spécifiques):

Le Ministère de l'Education, le Conseil National pour l'Education, les Fonds Nationaux Finlandais pour la Recherche et le Développement ont lancé ce programme conjointement à l'Association Finlandaise Freenet.

Le premier objectif de l'initiative est de soutenir les écoles primaires et les écoles secondaires et post-secondaires de formation professionnelle finlandaise dans l'accès à Internet et à d'autres sources d'information.

Cette action vise à améliorer les liaisons et l'accès au contenu, à accroître la conscience du potentiel d'Internet et l'intérêt à son égard, de favoriser de nouvelles méthodologies d'apprentissage visant à augmenter pour l'avenir le nombre d'étudiants et de travailleurs ayant des compétences informatiques.

Freenet offre des services Internet gratuits pour tous les étudiants, les enseignants, les parents et les partenaires de Freenet: courrier électronique, bulletins, nouvelles, world wide web, etc.

Freenet offre l'accès à une série de services de haute qualité aux mêmes conditions pour tous les usagers.

Un système sur texte supporte les usagers disposant de technologies de plus bas niveau; le système est suffisamment simple et accessible pour tous les usagers qui ont la nécessité d'acquérir les compétences de base de la télématique.

4. Envergure de l'investissement: Le Ministère de l'Education a affecté 142.000 ECU

5. Durée: en cours à partir du mois d'Octobre 1993

6. Description et Application de la Politique/du Programme/de l'Action:[37]

Il s'agit d'une action impliquant plusieurs acteurs: le Conseil National de l'Education est engagé principalement par le fait que Freenet fait partie du système scolaire officiel en Finlande, l'Association Finlandaise Freenet participe en tant qu'organisme organisant l'activité, alors que l'Institut pour l'éducation permanente Dipoli et l'University of Technology d'Helsinki font partie du programme.

L'activité concernant l'organisation se déroule sur la base du travail volontaire. Seulement trois personnes sont engagées à plein temps dans cette initiative. Les ressources de l'University of Technology d'Helsinki sont utilisées comme soutien aux services informatiques et de réseau.

7. Le contenu politique implicite ou explicite de chaque programme ou préciser la mesure:

Contenu politique explicite: le but spécifique des politiques consiste à accroître la conscience des possibilités offertes par Internet pour les enseignants, les étudiants, les enfants et les parents, et à les aider à tirer profit des opportunités et des services

[37] Une **Politique** est caractérisée par une série cohérente d'objectifs et de priorités, par une longue durée et par une allocation constante/fixe des ressources.
Un **Programme** est un mécanisme pour le démarrage d'une action visant à influencer certaines dimensions spécifiques ou à atteindre des objectifs politiques. Il peut être considéré en tant qu'un instrument pour appliquer une politique plus vaste (par exemple le livre blanc, le Mémorandum de l'Union Européenne ou les programmes Leonardo da Vinci, Socrates, COMETT, etc.).
Une **Mesure** est une action spécifique (un volet d'un cycle d'actions) qui peut être définie en termes de temps/durée, ressources allouées, contenus (par exemple le soutien à la mobilité des étudiants universitaires dans le cadre du programme Socrates).

du réseau, de façon à augmenter pour l'avenir le nombre d'étudiants et de travailleurs ayant des compétences informatiques.

Contenu politique implicite: la perspective la plus étendue vise a encourager la Finlande à devenir l'un des pays les plus développés du monde.

Contenu politique: ☐ bas (portant sur des questions techniques) ☒ haut

8. **Bénéficiaires directs:** Les enseignants, les étudiants, les enfants et les parents
9. **Bénéficiaires indirects:** Les personnes en contact étroit avec les destinataires directs qui désirent adopter une approche à l'égard d'Internet
10. **Intégration avec d'autres politiques/mesures/programmes:**
Freenet est une partie intégrante du système scolaire national de la Finlande
4. **Résultats et échecs principaux:**
Les résultats ont amplement dépassé les calculs de départ. Actuellement 70.000 personnes peuvent accéder à Internet et 10.000 connexions environ sont réalisées quotidiennement avec les services sur Internet. Au départ l'intérêt dans ce projet avait été sous-estimé, car l'expansion de l'intérêt attaché à Internet, surtout de la part des jeunes, a été plus rapide que prévu.
11. **Critères du succès et évaluation de la performance de l'initiative:**
Les principaux éléments de succès et de force sont le travail volontaire, les activités gratuites, l'emploi de personnes jeunes et créatives. L'initiative est aussi caractérisée par d'excellentes opportunités de développement pour l'avenir, grâce à l'évolution dans le domaine des télécommunications et des services Internet et en raison aussi de la disponibilité de la technologie récente chez l'University of Technology d'Helsinki. Un aspect négatif est la dépendance des financements de l'état et le risque de la concurrence de la part d'autres fournisseurs de services de réseaux et par d'autres institutions.

1. **Titre:** ***KORNET (Développement de la Qualité du travail et de l'apprentissage continu)***

2. **Pays:** **Finlande**

3. **Contexte de référence et objectifs (sources juridiques, nature/contenu, niveau institutionnel, objectifs primaires et spécifiques):**
Le Ministère de l'Education, en collaboration avec le Fonds Social Européen, a financé cette action réalisée par le Centre de Soutien National, par l'University of Technology d'Helsinki, par 7 Centres Régionaux de Soutien, par des Instituts de technologie et par le Ministère du Travail. Le projet vise à développer un système pratique pour réaliser ce que l'on appelle modèle triangulaire (coopération individu-entreprise-université) en utilisant la formation sur mesure, le matériel pour l'auto-apprentissage et les services télématiques modernes pour le travail et l'apprentissage à distance. Le but du projet consiste à développer une approche systématique des méthodes opérationnelles afin de créer du travail moyennant l'évolution de la Qualité du travail et de l'Apprentissage pendant toute la vie.

4. **Envergure de l'investissement:**
   Le projet est financé par le Fonds Social Européen (ESF) et par le Ministère de l'Education Finlandais 100%). Trois personnes sont engagées à plein temps dans le projet. Le coût de l'initiative a été de 900.000ECU.
5. **Durée:** 10 juillet 1996-31 décembre 1998
6. **Description et Application de la Politique/du Programme/de l'Action:**[38]
   Les institutions finançant l'initiative sont le Ministère de l'Education et le Fonds Social Européen. Les partenaires réalisant le projet sont le Centre National de Soutien et 7 Centres Régionaux pour l'apprentissage. Le réseau consiste donc en 7 Centres Régionaux pour l'apprentissage (RLC), qui se trouvent à l'intérieur d'instituts locaux de technologie, et le Centre National de Soutien (NSC), situé dans l'University of Technology. Les rôles des différents organismes et des membres du projet ont été définis dans les détails pendant la phase de développement du document conjoint.
   Le NSC est chargé de coordonner le programme (aussi bien le contenu que la plate-forme technologique) et la formation des tutors et de ceux qui accomplissent des fonctions d'assistance.
   L'action promeut l'établissement de groupes (clusters, grappes) d'individus faisant partie de PME au niveau de chaque Centre Régional pour l'apprentissage. La formation se fonde sur un système modulaire et sur le réseau de formation nationale créée par le programme. Dans chaque RLC un enseignant professionnel accomplit sa fonction de tutor, assisté par un membre de l'institution fournissant l'assistance technique. La formation vise a améliorer les activités d'équipe, le niveau opérationnel correspondant et les compétences des membres dans les domaines déterminés par l'analyse de la performance et des exigences de formation.
   Au cours de ce programme-pilote les équipes sont en train de développer de nouveaux services adressés aux propriétaires du domaine de la gestion des facilitations et de la création du renouvellement.
   Les nouvelles technologies pour l'apprentissage incluent entre autre: les vidéo-conférences ISDN pour des classes distribuées, le soutien concernant le World Wide Web pour les élèves, les applications du logiciel CAL, le système de soutien et de communication par ordinateur (CMC), le matériel pour l'auto-apprentissage et les parcours personnalisés.
7. **Le contenu politique implicite ou explicite de chaque programme ou préciser la mesure:**
   Contenu politique explicite: la motivation-clé pour le Ministère de l'Education est le soutien à l'apprentissage continu et à la formation, alors que le Fonds Social Européen vise principalement à insérer les personnes provenant de secteurs industriels en difficulté dans le monde du travail. L'University of Technology d'Helsinki, enfin, est intéressée au développement de matériel éducatif multimédia.
   Contenu politique: ☐ bas (portant sur des questions techniques) ☒ haut

[38] Une **Politique** est caractérisée par une série cohérente d'objectifs et de priorités, par une longue durée et par une allocation constante/fixe des ressources.
Un **Programme** est un mécanisme pour le démarrage d'une action visant à influencer certaines dimensions spécifiques ou à atteindre des objectifs politiques. Il peut être considéré en tant qu'un instrument pour appliquer une politique plus vaste (par exemple le livre blanc, le Mémorandum de l'Union Européenne ou les programmes Leonardo da Vinci, Socrates, COMETT, etc.).
Une **Mesure** est une action spécifique (un volet d'un cycle d'actions) qui peut être définie en termes de temps/durée, ressources allouées, contenus (par exemple le soutien à la mobilité des étudiants universitaires dans le cadre du programme Socrates).

8. **Bénéficiaires directs:**
   Le groupe des destinataires est représenté par les travailleurs del'industrie du bâtiment finlandaise et il inclut 120 élèves engagés dans des PME, des chômeurs et des jeunes
9. **Résultats et échecs principaux:**
   Parmi les principaux résultats, il faut sans aucun doute énumérer le développement d'un réseau decollaboration entre les institutions participantes
10. **Critères du succès et évaluation de la performance de l'initiative:**
    L'évaluation est réalisée simultanément dans les 7 Centres Régionaux. Le projet a été divisé en 5 phases. Les phases de 1 à 3 impliquent la création du réseau et la réalisation du programme-pilote. La phase 4 inclut le développement et la documentation du processus. La phase 5 comprend le test du modèle dans un autre pays européen. L'importance attribuée au modèle est liée à l'évaluation: les méthodes utilisées dans la mise en place du réseau national de formation, l'application des technologies de l'apprentissage et du soutien à l'apprentissage, les formules utilisées pour la création des équipes (clusters) et les procédés de travail employés par les équipes.

1. **Titre:** *NOFNET - La Finlande vers la Société de l'Information*

2. **Pays:** Finlande
3. **Contexte de référence et objectifs (sources juridiques, nature/contenu, niveau institutionnel, objectifs primaires et spécifiques):**
   Le Ministère de l'Education a lancé cette initiative en recevant la collaboration de l'Université de Oulu et du Northern Finland Learning Network (le réseau pour l'apprentissage de la Finlande du Nord) et en coopération avec 13 Centres d'Etude locaux. L'objectif principal est de permettre aux enseignants d'acquérir les compétences concernant le développement de la Société de l'Information dont ils nécessitent pour l'activité de travail présente et future. L'initiative consiste dans la mise au point d'un vaste et complexe système de formation visant à améliorer la diffusion de la télématique dans la Finlande du Nord. La formation est pourvue moyennant l'utilisation des services de vidéo-conférence multipoint, des milieux d'apprentissage WWW, des services de courrier électronique, des modules pour l'apprentissage individuelle et du tutoring local ou à distance. Les compétences qui font l'objet de l'apprentissage tiennent à la dimension technique, pédagogique et culturelle de la télématique. En termes de quantité, le projet vise à accomplir la formation d'environ 800 enseignants.
4. **Envergure de l'investissement:** 400.000 ECU (Ministère de l'Education)
5. **Durée:** Septembre 1996- Décembre 1997
6. **Description et Application de la Politique/du Programme/de l'Action:**
   Cette action est financée complètement (100%) par le Ministère de l'Education. Deux personnes sont engagées à plein temps et une est engagée à mi-temps auprès de l'Université de Oulu; le système de soutien est composé par 13 tutors engagés à mi-temps qui sont en service dans les Centres d'étude locaux. La stratégie principale est représentée par l'utilisation de nouveaux milieux d'apprentissage et du réseau NOFNET existant en collaboration avec les Centres d'Etude qui ont développé des infrastructures techniques fonctionnelles en participation et suivant un système standardisé.
7. **Contenu politique explicite:**
   le but explicite des politiques est la formation desenseignants, afin d'améliorer leurscompétences dans l'utilisation de nouvelles technologies dans le contexte didactique
   Contenu politique: ☐ bas (portant sur des questions techniques) ☒ haut

8. **Bénéficiaires directs:** 800 enseignants travaillant dans différentes institutions de l'éducation, sauf les universités

9. **Bénéficiaires indirects:** Les étudiants qui bénéficient du fait d'avoir des enseignants mieux préparés et possédant des qualifications et des capacitésplus étendues dans le domaine des nouvelles technologies.

10. **Intégration avec d'autres politiques/mesures/programmes:**
Le projet est une partie intégrante du Programme national pour la société de l'Information.

11. **Résultats et échecs principaux:**
Les résultats plus significatifs de NOFNET dégagent de la création du réseau d'apprentissage, du développement de milieux et d'instruments d'apprentissage pour Internet et de l'expérience croissante dans l'emploi des technologies.

12. **Critères du succès et évaluation de la performance de l'initiative:**
Le principal élément de succès de l'initiative est représenté par le développement accompli d'un modèle général qui peut être appliqué à tous les types d'éducation continue et de formation.
Le projet est evalué par un groupe spécial de recherche qui utilise les lignes directrices fournies par le Ministère de l'Education. Les éléments qui font l'objet de l'évaluation sont:
- les résultats de l'apprentissage et l'impact de la formation sur les institutions éducatives;
- le fonctionnement du réseau et des Centres d'étude locaux;
- la fonctionnalité de la technologie de l'éducation, des milieux d'apprentissage et des technologies/des médias utilisés dans la réalisation de la formation (éducation à distance, systèmes de soutien de l'apprentissage, tutoring, etc.)

Titre	*Des aspects des politiques de l'ODL contenus dans une proposition par un nouveau comité sur l'éducation continue en Norvège*

Erling Ljoså- NKS - erling.ljosa@nks.no

Pays: **Norvege**

L'étude de cas énoncée par cet apport est la recommandation présentée le 1er Octobre 1997 au Ministère de l'Education de la Norvège par un comité pour les réformes dans l'éducation continue, le Buer Committee. Les recommandations dans la relation sont décrites et analysées brièvement dans le cadre conceptuel établi par l'ODL Policy Seminar. Les commentaires exprimés représentent des avis personnels.

Le rôle des politiques de l'ODL dans un contexte plus vaste

Dans les années 90 la Norvège a appliqué une série de réformes éducatives dans l'éducation supérieure, dans l'éducation et la formation secondaire supérieure, dans l'éducation adressée aux enseignants et dans l'éducation primaire.
Les acteurs politiques sont généralement conscients de la nécessité d'une réforme dans le cadre de l'éducation pour les adultes et de l'éducation continue afin d'améliorer le système existant. Le consensus général se base sur la notion selon laquelle les partenaires sociaux, le gouvernement, le système éducatif au sens large et les individus devraient tous contribuer par leur apport à un système de création des compétences visant à une perspective d'apprentissage continu. Le Buer Committee est formé par les représentants des partenaires sociaux, du gouvernement et de différentes institutions et organismes importants.
Initialement l'objectif principal dégageait d'une proposition concernant le droit légal des individus à obtenir des congés d'étude et l'obligation des partenaires sociaux et du gouvernement à repérer les mécanismes nécessaires afin de financer cette réforme.

Cet objectif a été pourtant partiellement modifié pendant les travaux du comité. La proposition concernant le droit à un congé d'étude pour l'éducation continue a été préservée, mais les partenaires sociaux ont maintenant la faculté de décider à l'égard des financements et d'autres règles.

Le gouvernement devrait financer une offre libre adressée à tous les adultes qui aimeraient terminer leur éducation secondaire supérieure. Afin d'améliorer le développement des qualifications et des compétences dans les entreprises et dans l'industrie, le gouvernement devrait mettre en place un soutien adressé à une série d'interventions qui accroîtraient la flexibilité du système et qui valoriseraient une coopération efficace entre l'offre et la demande dans le marché.

L'éducation ouverte et à distance (ODL) est jugée essentiellement en relation à quatre points de vue:

1. Si l'on suppose que l'offre libre de l'éducation secondaire et de la formation pour les adultes conduit à une demande qui va dépasser largement la capacité du système scolaire, les organisations pour l'éducation des adultes et à distance pourraient être chargés par les autorités du pays (sur une base contractuelle) de réaliser une partie du travail en question. La raison politique à la base de cette suggestion dégage clairement de l'argumentation concernant un produit économique traditionnel ou un service (un plus grand efficacité pour le même investissement).
2. On a proposé des mesures visant à créer un système éducatif plus «ouvert» (indication des compétences acquises, accès ouvert à l'éducation continue, etc.). Une série d'obstacles pratiques et financiers devrait être éliminée. Dans ce contexte on souligne le caractère ouvert mais on ne mentionne pas explicitement l'obstacle représenté par la distance.
   L'ouverture et l'accès sont développés principalement sur la base d'une argumentation concernant le produit social (un système plus flexible et efficace d'éducation continue) qui ne souligne pas de façon marquée les opportunités des individus.
3. L'éducation à distance est tout d'abord un moyen pour accroître la flexibilité. Etant donné que l'ouverture est l'un des aspects de la flexibilité, on ne devrait peut-être pas souligner excessivement cette distinction. L'utilisation de l'ODL va augmenter la flexibilité aussi bien du point de vue de la demande, que du point de vue de l'offre. Les étudiants peuvent commencer à travailler et à intégrer l'étude et le travail - un facteur avantageux aussi bien pour les individus, que pour les entreprises. L'ODL va aussi accroître la flexibilité des institutions qui s'occupent de l'éducation, en particulier en ce qui concerne l'organisation des études. On souligne également l'exigence d'une coopération plus efficace entre le côté de l'offre et le côté de la demande dans le développement et dans l'adaptation des programmes de l'éducation continue. Les points mentionnés peuvent être définis des questions fondés sur un produit social, et l'ODL peut être vu comme un catalyseur de l'innovation d'un système qui fonctionne aujourd'hui de façon sub-optimale.
4. Les recommandations concernant l'ODL sont strictement liées à l'utilisation des ICT. Des formes plus traditionnelles d'éducation à distance sont considérées exclusivement en tant qu'alternatives optionnelles. On a proposé un grand programme de développement et de recherche sur l'éducation à distance fondé sur les ICT. Cette proposition n'est pourtant pas due à une préoccupation à l'égard de la promotion d'une industrie des ICT ou à l'adaptation à la société de l'information. La simple existence des ICT est considérée une opportunité pour l'innovation et pour la flexibilité.

Les aspects des politiques de l'ODL contenus dans la relation du Comité Buer sont efficacement intégrés dans un contexte politique plus vaste. Certaines interventions sont consacrées à l'ODL en tant qu'apprentissage fondé sur les ICT (la définition n'est pas suffisamment claire), mais l'ODL est intégré aussi dans des interventions plus générales (la «deuxième chance» gratuite pour l'éducation secondaire, la coopération entre usagers et fournisseurs).

Ceci ne représente pas un phénomène nouveau dans les documents concernant la politique norvégienne de l'éducation, mais l'intégration indique probablement de nouveaux pas en avant. La Norvège dispose d'un document normatif distinct concernant l'éducation par correspondance de 1948 à 1992, quand la réglementation des «institutions indépendantes pour l'éducation à distance» était inclue dans l'Acte pour l'Education des Adultes. Une relation sur l'éducation supérieure de 1988 a proposé une réorganisation de la structure institutionnelle fondée sur un modèle à réseau, «Le Réseau Norvégien»; l'apprentissage à distance était considéré comme une partie intégrante de ce modèle. Dans un livre blanc sur l'éducation continue de 1989-90 (initialement défini comme un livre blanc sur l'éducation à distance) on affirmait que l'apprentissage à distance devrait être mis en place dans tous les secteurs de l'éducation et on proposait la création d'un Conseil exécutif sur l'éducation à distance au niveau universitaire et au niveau des collèges (l'acronyme norvégien SOFF, établi en 1990). L'ODL a également fait partie d'un certain nombre de documents politiques concernant l'éducation, l'emploi et le développement des Technologies de l'Information (IT), même s'il s'agissait en général d'une déclaration universelle ou bien intégrée dans des subdivisions spécifiques du système éducatif.

Il n'est pas possible de déterminer avec précision à quel niveau ce développement renforce la théorie d'une tendance cyclique dans les politiques de l'ODL. Dans un schéma cyclique la relation du comité Buer se situe évidemment dans la dernière phase (intégration dans des politiques plus vastes). De l'autre côté, cela accroît l'importance du rôle assigné à l'ODL dans le cadre de l'innovation du système, et il reste à voir si les politiques de l'ODL vont «s'épuiser au moment où elles ont du succès» (cf. la relation sur le sujet 3 au séminaire de Copenhague). Le chemin à parcourir est encore long avant qu'elles puissent avoir du succès.

Tensions concernant les stratégies d'application

La relation met en évidence une certaine tension à l'intérieur du comité Buer concernant certaines des stratégies d'application. Cette tension influence en particulier les aspects de la relation qui portent sur les politiques de l'ODL.

Les motivations de cette tension paraissent être de deux types:

1. Les différentes logiques caractérisant d'un côté les affaires et les industries et de l'autre côté les institutions éducatives et le ministère de l'éducation. Le premier aspect peut être défini une logique fondée sur le marché et sur le profit, où le développement de la compétence est un objectif subordonné apportant de la valeur au produit ou au service principal. Le deuxième aspect est caractérisé par la recherche de la connaissance pure, où l'éducation fondée sur la recherche est le noyau des «affaires» alors que la structure gouvernementale est assez bureaucratique. Cette différence devrait être admise en tant que légitime, mais il s'agit plutôt d'un défi portant sur la création et la mise en place des mécanismes adéquats qui vont encourager une collaboration féconde entre les acteurs.
2. Au sein du comité il y avait aussi des points de vue différents concernant le rôle de l'éducation publique dans le marché de l'éducation continue et les rapports optimaux entre les acteurs publics et les acteurs particuliers.

Certains membres du comité semblent avoir un point de vue assez sceptique par rapport à la capacité et à la volonté des structures organisatrices traditionnelles (institutions et ministres) d'atteindre le niveau nécessaire de flexibilité et de capacité dans la collaboration avec les entreprises et les industries. Ces membres ont donc une tendance à rechercher de nouvelles solutions institutionnelles. Certains d'entre eux, par exemple, soutiennent une proposition présentée par l'Association des employeurs norvégiens visant à instituer une nouvelle «Université Ouverte» (ils ont cependant précisé qu'ils ne sont pas favorables à une institution modelée sur la base des universités ouvertes traditionnelles). D'autres membres sont favorables à une Université «connectée» qui relève de la coopération avec les universités et les collèges existants et qui soit coordonnée par un SOFF réorganisé. Ce réseau devrait aussi coopérer avec les Centres de Ressources, pour ainsi dire, qui ont déjà été établis et branchés

à plusieurs écoles secondaires supérieures, partiellement en concurrence avec les organisations éducatives volontaires pour les adultes. Ces membres jugent aussi qu'il faudrait instituer un organisme coordinateur qui s'occupe de ces centres. Une majorité des membres (presque tous, sauf les représentants des différents ministères) recommande que la plupart des interventions publiques proposées dans la relation soient réalisées sous responsabilité d'un «Secrétaire pour le Développement» extraordinaire extérieur par rapport au Ministère de l'Education. La motivation correspondante dégage de la perception du Ministère en tant que trop conservateur et ferme.

Le comité ne disposait pas de temps suffisant pour analyser dans les détails les différentes propositions concernant ces options sur l'organisation et d'autres encore au sujet de la phase de réalisation. Le Ministère rédigera un livre blanc, sur la base de la relation du Printemps 1988, qui va sans aucun doute tenir compte des mêmes propositions et des stratégies d'application et qui va en discuter dans le cadre du système bureaucratique et politique avant la phase de réalisation.

D'un point de vue, les différentes positions représentent probablement de différentes approches par rapport au rôle des «forces du marché» dans l'éducation continue. Tous les membres sont d'accord sur le fait que les universités existantes et les collèges doivent jouer un rôle essentiel dans un système flexible d'éducation continue.

Cependant, dans d'autres propositions, on ressent non seulement une inquiétude à l'égard du renouvellement des institutions publiques, mais aussi une tendance vers la suprématie des institutions publiques, tandis que d'autres types d'acteurs paraissent rester aux marges. Ce point n'est pas exprimé explicitement, mais on l'aperçoit à cause de l'absence d'inquiétude à l'égard de stratégies alternatives ou supplémentaires et d'interventions.

La relation convient, par exemple, sur le fait qu'un certain nombre de fournisseurs alternatifs, tels que les organisateurs de l'éducation pour les adultes ou les institutions indépendantes pour l'éducation à distance, peuvent appliquer une logique de marché qui ressemble beaucoup plus à celle employée par les entreprises et par l'industrie qu'à celle adoptée par la plupart des fournisseurs publics. C'est pour cette raison que ceux-ci représentent des éléments significatifs du système actuel. Cependant, on ne propose aucune intervention visant à encourager l'utilisation de leurs services, ce qui représenterait au contraire une stratégie très efficace, car on assisterait ces fournisseurs dans l'amélioration du niveau technologique de leurs infrastructures afin qu'il puissent servir les usagers de la façon la plus efficace possible dans l'avenir. En incarnant une culture beaucoup plus proche à celle du monde des affaires, ces fournisseurs peuvent également être utilisés plus systématiquement en tant qu'intermédiaires entre les usagers dans les affaires et dans l'industrie et le système éducatif plus rigide.

La relation affirme que les fonds publics, en règle générale, devraient être limités au stade de développement des projets, car les fonds pour les coûts opérationnels peuvent interférer avec les mécanismes actuels du marché et avec la concurrence. Cela est certainement vrai, mais le financement pour le développement du projet aussi et les propositions concernant la structure de l'organisation (nouvelles institutions, organismes coordonnateurs, etc.) vont influencer encore plus les positions et les forces du marché. Le gouvernement devrait se rendre conscient de la dimension de sa politique et de ses interventions spécifiques.

Pour terminer, je doute que la distinction soit évidente dans la plupart des recommandations dans le contexte des niveaux éducatifs et des types de programmes; de fait elle est cohérente avec la logique des usagers dans le monde des affaires et de l'industrie. Les entreprises et les usagers considérés distinctement ne sont pas tellement intéressés à la question si les nouvelles compétences et les nouvelles qualifications sont classées en tant que partie intégrante de l'éducation supérieure ou à la formation professionnelle au niveau secondaire - sauf la situation concernant la certification à l'intérieur du système. Beaucoup de compétences de la vie réelle ne peuvent être classées en aucune manière sur la base de la terminologie et des structures du système éducatif. Voilà un des dangers dans la liaison entre les initiatives nouvelles, les programmes et les structures existantes.

Evaluation comparée?

Les inquiétudes du Comité Buer sont plus ou moins partagées par d'autres pays, et dans certains de ceux-ci on a pris en considération des initiatives de ce genre. Le Gouvernement britannique, par exemple, a lancé son initiative concernant une «université pour l'industrie», le Ministère danois de l'éducation vient de lancer une nouvelle action qui s'appelle «éducation et entreprise», et le Gouvernement suédois a commissionné une relation sur l'éducation à distance en l'été de l'année 1988. Il serait particulièrement intéressant - dans le cadre du plan établi par le projet ODL Policy Seminar - de réaliser une analyse comparée et une évaluation de ces initiatives et de ces relations, et d'y inclure éventuellement les initiatives des autres pays. S'il était possible d'étendre cette évaluation à la phase de réalisation, cela pourrait être encore plus intéressant et utile. Evidemment cela excède le but de ce projet.

1. Titre: ***Service on-line et formation***

2. **Pays:** **France**
3. **Contexte de référence et objectifs (sources juridiques, nature/contenu, niveau institutionnel, objectifs primaires et spécifiques):**
   L'initiative à été lancée par une Chaîne Télé Publique avec le soutien d'une société particulière de services on-line. L'objectif de la chaîne télé de l'éducation française (La Cinquième) est de propager la connaissance par les différents moyens d'émission. Elle vise à offrir à ses téléspectateurs une extension de ses émissions télé. Afin de fournir des services pour Internet, La Cinquième Développement a établi un partenariat avec Infonie. La Cinquième, en collaboration avec ses partenaires, a créé un site qui s'appelle «W5», où le public peut repérer des informations supplémentaires sur les programmes des chaînes télé et où on a l'accès direct au site Infonie e aux autres adresses (URL) des sujets auxquels on est intéressés. Grâce aux informations supplémentaires, W5 est à même d'orienter le public vers les adresses concernant la formation et, éventuellement, le travail.
   En ce qui concerne le développement de modalités on-line dans le domaine scolaire, La Cinquième considère que les enseignants utilisent le réseau chez eux et propose donc la diffusion de services pour les familles.
4. **Envergure de l'investissement:** 1.000.000 ECU
5. **Durée:** en cours, depuis décembre 1996
6. **Description et Application de la Politique/du Programme/de l'Action:** [39]
   Infonie fournit l'infrastructure technique et les contenus, tandis que La Cinquième est l'éditeur de W5. Bien que la chaîne soit publique, W5 est un produit commercial. La Cinquième Développement touche des redevances pour chaque souscription. Chaque souscripteur d'Infonie a l'accès à tous les services de W5. Chaque fournisseur a son éditorial et ses associés. La Cinquième vise à garder son indépendance par rapport aux autres fournisseurs d'audiovisuels et des télécommunications. L'objectif consistant à soutenir les téléspectateurs dans l'essor d'une attitude active à l'égard de la connaissance

[39] Une **Politique** est caractérisée par une série cohérente d'objectifs et de priorités, par une longue durée et par une allocation constante/fixe de ressources.
Un **Programme** est un mécanisme pour le démarrage d'une action visant à influencer certaines dimensions spécifiques ou à atteindre des objectifs politiques. Il peut être considéré en tant qu'un instrument pour appliquer une politique plus vaste (par exemple le livre blanc, le Mémorandum de l'Union Européenne ou les programmes Leonardo da Vinci, Socrates, COMETT, etc.).
Une Mesure est une action spécifique (un volet d'un cycle d'actions) qui peut être définie en termes de temps/durée, ressources allouées, contenus (par exemple le soutien à la mobilité des étudiants universitaires dans le cadre du programme Socrates).

ne doit pourtant pas se traduire en une transformation en producteur de contenus, à moins que cela ne soit nécessaire.

7. **Le contenu politique implicite ou explicite de chaque programme ou mesure:**

Contenu politique explicite: Le contenu politique du programme porte sur les aspects suivants:

- renouveler les méthodes pédagogiques et le contexte des institutions éducatives (à long terme);
- accroître la conscience et la sensibilité des enseignants, du personnel engagé dans des institutions éducatives et des familles par rapport aux bénéfices de l'éducation multimédia;
- favoriser la propagation des informations sur les produits et les pratiques.

Contenu politique implicite: Le but le plus implicite consiste à augmenter l'audience et étendre les services qui lui sont offerts.

Contenu politique: ☐ bas (portant sur des questions techniques) ☒ haut

8. **Bénéficiaires directs:** Les destinataires directs de l'initiative sont les familles et les institutions de l'éducation primaire et secondaire

9. **Bénéficiaires indirects:** Tous ceux qui adhèrent à Infonie, même s'ils n'ont pas adhéré à W5

10. **Résultats et échecs principaux:**
La Cinquième a choisi un partenaire avec un public très vaste, une interface extrêmement intuitive, une vaste gamme de services. L'approche adoptée vise à éviter que les usagers s'exposent directement à la jungle «web».
Actuellement le principal aspect négatif est lié à la pénurie d'équipements.

11. **Critères du succès et évaluation de la performance de l'initiative:**
L'initiative adopte une approche particulièrement «user-friendly» et l'accès est facile.
Il serait prématuré de réaliser une évaluation qui dépendra du nombre des souscripteurs et de leur degré de satisfaction.

12. **Probables développements/plans futurs:**
La Cinquième juge que l'avenir de la télévision sera lié aux services multimédia (on-line et off-line). L'objectif consiste à proposer dès maintenant le premier scénario possible. La Cinquième a également amorcé une négociation afin d'assurer le libre accès aux écoles.
L'initiative pourrait être développée dans d'autres situations où les chaînes télés possèdent des contenus éducatifs.

1. **Titre:** ***Programma di Sviluppo delle tecnologie didattiche nel periodo 1997-2000 (Programme de développement des technologies didactiques dans la période 1997-2000)***

2. **Pays:** **Italie**

3. **Milieu:**
À la fin des années 90 le système scolaire italien vise à réévaluer ses objectifs et ses processus de formation et à les redéfinir, aussi bien sur la base des expériences acquises que grâce à l'expérimentation, qu'en allant au delà de l'innovation, afin de pouvoir répondre - aussitôt que possible et par les plus hauts niveaux possibles de qualité - aux exigences du développement social et économique du pays. L'objectif consiste à définir un nouvel ordre d'études dont les conditions auxquelles on ne peut pas renoncer seront les

connaissances et les compétences nécessaires afin de maîtriser et d'adapter la technologie, étant donné que les technologies de l'information et de la communication représentent une condition requise de plus en plus importante pour l'accès au travail.
Le Ministère de l'Education Publique s'est aperçu que le multimédia est désormais une dimension culturelle dont il faut tenir absolument compte dans le processus d'évolution des personnes, des citoyens et des travailleurs.
Le développement du multimédia dans les écoles doit établir un équilibre aussi bien par rapport aux desseins de renouvellement du système scolaire approuvés par le Gouvernement qu'avec les exigences et la spécificité des niveaux et des différents degrés.
Le programme en question vise à mettre toutes les institutions scolaires en condition de hausser la qualité des processus de formation moyennant l'utilisation répandue des techniques et des technologies multimédia.

4. **Contexte de référence et objectifs (sources juridiques, nature/contenu, niveau institutionnel, objectifs primaires et spécifiques):**
Il s'agit d'un programme du Ministère Italien de l'Education Publique qui affecte des financements aux écoles de tous les niveaux et degrés présentant des projets qui encouragent l'utilisation du multimédia dans la salle de classe et la mise à jour des enseignants.
Le programme a été prévu pour la période 1997-2000 et il vise à développer des technologies didactiques liées aux technologies de l'information et de la communication. Il vise à attendre trois grands groupes d'objectifs:
a) la familiarisation des étudiants avec le multimédia dans l'apprentissage;
b) l'amélioration de l'efficacité de l'enseignement et de l'apprentissage des sujets;
c) le perfectionnement du professionnalisme des enseignants.
Le programme est articulé de la façon suivante:
Comme on vient de l'indiquer, le programme se développe autour de trois différents types d'action et de projet. Chaque catégorie possédera ses objectifs, ses ressources et, s'il le faut, ses modalités d'organisation. La structure correspondante est la suivante:
I Projets généraux (a) l'unité opérationnelle pour les enseignants
(b) le multimédia dans la salle de classe
II Projets ciblés spéciaux
III Projets-pilote

5. **Envergure de l'investissement**:
1000 milliards de lire environ sur trois ans; ce genre d'investissement nécessite du cofinancement par des sources externes: administrations locales, programmes de l'Union Européenne, fonds particuliers. Le programme est l'un des plus grands en Europe en ce qui concerne les buts et les ressources employées.

6. **Durée**: 3 ans

7. **Description et Application de la Politique/du Programme/de l'Action**:
I Projets généraux: ils visent à structurer l'action en relation à des objectifs définis par les écoles concernant deux types de projets:
a) les unités opérationnelles pour les enseignants, visant à consentir aux enseignants de se équiper avec des instruments pour obtenir une formation de base initiale sur le multimédia, examiner le produit pédagogique et le développer à leur tour, analyser les possibilités d'application du multimédia dans la didactique, coopérer avec d'autres enseignants provenant de la même école ou d'écoles lointaines, intéresser des classes ou des groupes d'étudiants à des activités non-systématiques qui requièrent l'utilisation du multimédia.
b) le multimédia dans la salle de classe: le projet vise à consentir l'introduction du multimédia parmi les normales activités du programme scolaire. Le Ministère

indiquera les critères et les priorités liés aux politiques innovatrices et aux problèmes les plus importants dans les écoles de niveau différent.

II Projets ciblés spéciaux: ils affectent les ressources additionnelles à des objectifs spécifiques, y compris le soutien à l'innovation (par exemple, l'enseignement d'une langue étrangère à l'école primaire). Le développement de ce projet a lieu simultanément aux projets susmentionnés, dont il représente une spécialisation. La direction ministérielle fournira aux écoles des lignes directrices et des services spécifiques.

III Projets-pilote: ils impliquent l'expérimentation de solutions technologiques, didactiques et d'organisation plus avancées dans un nombre réduit d'écoles; au fond de ces projets il y a l'exigence ressentie de tenir compte de situations spécifiques.

Parmi les acteurs/réalisateurs-clé du programme on énumère:

1 Ministère de l'Education Publique
2 Organismes et instituts de recherche: STET, RAI, Départements Universitaires (Département de Science de l'Education de Rome III et de Florence), Instituts de Recherche (CRS4, Institut pour les Technologies Didactiques et Institut de Psychologie du CNR)
3 Des écoles

Au cours des trois ans on va inclure dans le projet 15.000 écoles, 5.000 par an.

Les écoles comprises dans le programme vont bénéficier de ressources financières pour les équipements et pour la formation.

En ce qui concerne les équipements on prévoit la création d'une unité technique-opérationnelle chargée de l'assistance, de la définition des projets et du développement et equipée de services multimédia dans toutes les écoles participant au projet.

En ce qui concerne la formation des enseignants, au cours d'une première phase on va leur permettre d'apprendre les méthodes de base du multimédia, tandis que la deuxième phase se focalisera sur l'étude des instruments et des applications pédagogiques.

On va également mettre en place un réseau d'écoles, fondé sur l'utilisation de systèmes télématiques, permettant aux écoles de partager les informations et les résultats pédagogiques et de jeter les bases d'une coopération entre elles. La réalisation de ce réseau est aussi l'un des résultats du programme de développement des technologies éducative ainsi qu'un instrument essentiel. On va aussi développer davantage le Système d'Informations de l'Education Publique existant, afin de réaliser un réseau d'écoles additionnel visant principalement à résoudre les problèmes de gestion et à apprêter de différentes modalités de communication et de différents services. On va également instituer des Unités Opérationnelles pour les enseignants qui mettront à disposition des connexions aux réseaux, l'utilisation de services télématiques (y compris l'accès à Internet) à des conditions favorables.

Le principal instrument visant à alimenter ce processus d'innovation va être la réalisation d'un réseau d'informations et de matériel que les enseignants pourront consulter aisément et qui vont être réalisés ad hoc. Ces informations et ce matériel incluront des catalogues généraux des produits réalisés par chaque école ou dans le cadre de projets coordonnés, des guides et des documents d'informations, des banques de données, des banques de produits pédagogiques, des pages WEB.

Procédés pour les nouveaux projets: le Ministère prescrit les lignes directrices et les instructions appropriées concernant les objectifs de l'initiative et il exhorte les écoles intéressées à présenter leurs demandes pour participer aux différentes catégories de projets. Une fois envoyée la demande, les écoles recevront un guide expliquant les objectifs de l'initiative, les priorités pour les différentes écoles, les types d'équipements et les modèles de configuration et une fiche pour la présentation du projet auquel l'école voudrait participer. Les écoles présenteront ensuite leurs propositions et leurs projets

aux Inspecteurs d'Académie (Provveditori) qui, avec l'assistance des comités de consultation, vont effectuer une première sélection et vont présenter le plan des demandes au Ministère. Le Ministère procédera ensuite à la répartition des fonds par niveau scolaire et par province.

8. **Veuillez préciser le contenu politique implicite ou explicite de chaque programme ou préciser la mesure:**

   Contenu politique explicite:

   a) Créer des bases pour la formation continue des enseignants grâce à la Formation à Distance (FAD)
   b) Encourager la création de produits multimédia
   c) Permettre l'introduction du multimédia parmi les normales activités du programme scolaire
   d) Développer les standards technologiques, de l'organisation et des services généraux
   e) Créer un réseau d'écoles afin de partager les informations et les résultats pédagogiques et de mettre en place la coopération.

   Contenu politique implicite:

   Favoriser l'introduction des jeunes dans le monde du travail.

9. **Bénéficiaires directs:**

   Les enseignants et les élèves des écoles de tous les niveaux et degrés.

10. **Intégration avec d'autres politiques/mesures/programmes:**

    Le Ministère, en considération de l'envergure du programme, a souligné l'exigence d'intégrer les ressources avec d'autres ressources provenant de sources extérieures (provinces, Communauté Européenne, etc.). De plus, les projets-pilote peuvent avoir une origine et des structures différentes: ils peuvent être promus par le ministère, par une direction ou par une collaboration inter-directions; ils peuvent impliquer la participation ou la collaboration d'organismes extérieurs ou ils peuvent également dégager d'initiatives auxquelles le Ministère participe de différentes manières et avec de différents niveaux de responsabilité. Il faut souligner que les projets-pilote ont déjà été définis et qu'un certain nombre d'entre eux sont déjà en cours de réalisation.

11. **Résultats et échecs principaux:**

    Une série de projets-pilote en phase de démarrage semble apporter des résultats encourageants qui seront probablement répétés sur une grande échelle afin de produire un effet en cascade; ce résultat pourrait s'accomplir par la création d'un noyau d'écoles ayant des expériences avancées qui peuvent représenter un point de repère pour ceux qui n'amorcent le processus d'adaptation aux technologies didactiques multimédia que successivement.

12. **Critères du succès et évaluation de la performance de l'initiative:**

    Il serait actuellement prématuré de réaliser une évaluation détaillée. Le programme implique la mise au point d'un système de monitorage et d'une évaluation intermédiaire et finale des résultats. Le suivi et l'évaluation représenteront un véritable sous-projet qui sera réalisé aussi bien par des acteurs appartenant au contexte scolaire que par des évaluateurs extérieurs.

    En particulier, on identifie des critères de succes dans la création de catalogues généraux du matériel réalisé par chaque école ou dans le cadre des projets en coordination et dans la création de guides, de documents d'information, de banques de données, de banques de produits pédagogiques et de pages WEB.

    On a institué un Comité de Coordination visant à définir les plans et les actions et à poursuivre et à organiser les actions générales correspondantes au niveau national.

    Le Noyau Opérationnel est chargé de développer et d'organiser les actions générales.

    Les Unités opérationnelles s'occupent d'adapter la stratégie du programme aux exigences du domaine.

13. Probables développements/plans futurs:

Parmi les priorités on recense l'amplification et le développement des relations avec le plus grand nombre possible de centres de recherche. Il est également nécessaire de créer un réseau d'écoles, fondé principalement sur l'utilisation des systèmes télématiques, incluant tous les sujets intéressés et donnant efficacité aux processus de communication et de partage des informations, des résultats didactiques et de la coopération. Au cours des prochaines années, le Système d'Informations de l'Education Publique va évoluer de façon à constituer un réseau des écoles adressé essentiellement à résoudre les problèmes de gestion, prédisposé pour de différentes modalités de communication et de services et ouvert à la connexion avec d'autres réseaux. Il est aussi indispensable qu'on réalise un développement visant à fournir aux écoles un soutien valable pour la formation tel que l'organisation et la gestion de systèmes de conversation et d'échange télématique entre les écoles et les fournisseurs de services, la réalisation et la distribution d'instruments d'auto-formation et la mise en place de systèmes de formation.

Matériel disponible sur le site WWW (Internet):

- http://www. forminform.it/multimedia/progr.htm
- http://dante.bdp.it/~dgsm0001/iniziati/circmm.html

1. Titre: ***Programa de las Nuevas Tecnologías de la Información y de la Comunicación (PNTIC) (Programme de nouvelles technologies de l'Information et de la Communication)***

2. Pays: **Espagne**

3. Milieu:

De même que dans les autres pays européens, en Espagne aussi la mise à jour et l'amélioration du système scolaire ainsi que la qualité de l'enseignement sont l'une des priorités à réaliser par l'introduction des technologies de l'information et de la communication dans le domaine de l'edication. Par certains de ses actes le Parlement, reconnaissant l'exigence de s'adapter et de répondre aux exigences de l'intégration européenne, a approuvé une série de mesures de réforme du système scolaire qui vont de la réorganisation des cycles scolaires (avec l'introduction de l'obligation scolaire jusqu'à 16 ans) à l'incorporation de nouvelles technologies. Cet objectif est poursuivi par l'introduction de l'utilisation des médias audiovisuels dans les écoles, par le soutien à l'innovation et à l'éducation, par l'encouragement adressé à la recherche méthodologique, technologique, pédagogique et de l'organisation. En tant que couronnement à cette politique on a institué des centres de recherche spécifiques concernant le domaine éducatif et pédagogique.

Le plan des actions à réaliser a été indiqué dans la loi: Ley Orgánica de Ordenación general del sistema educativo (LOGSE). Cette loi réorganise les parcours scolaires jusqu'à l'école secondaire et essaye d'introduire le domaine technologique dans les écoles afin que les étudiants puissent se familiariser avec les technologies multimédia; de l'autre côté la loi essaye d'obtenir les mêmes résultats par rapport aux adultes, au cours des séances d'auto-apprentissage.

4. Contexte de référence et objectifs (sources juridiques, nature/contenu, niveau institutionnel, objectifs primaires et spécifiques):

A la suite du plan normatif susmentionné, le Ministère de l'Education a lancé le Programme en question.

Le principal objectif de ce projet est l'introduction et la diffusion des technologies multimédia pour l'éducation et la formation dans les écoles. Les objectifs spécifiques peuvent être synthétisés par les points suivants:

a) Réorienter les lignes directrices de l'éducation en relation aux nouvelles tendances et aux nouveaux choix technologiques.
b) Favoriser la réalisation de projets et le développement de services et de produits innovateurs par l'application des nouvelles technologies de l'information et de la communication dans l'éducation.
c) Amplifier la disponibilité de l'accès à Internet grâce à la connexion de tous les centres éducatifs au réseau.
d) Encourager les programmes éducatifs à la télé.
e) Introduire le programme dans des projets nationaux et internationaux.
f) Réaliser la formation des enseignants.
g) Réaliser la formation des tutor à distance.

5. **Envergure de l'investissement:**
Depuis l'année 1989 on a achevé le développement d'à peu près 3.000 projets éducatifs, on a placé 25.000 workstations et 4.800 appareils audiovisuels, et on a réalisé la formation de 30.000 enseignants spécifiquement en ce qui concerne l'utilisation des technologies de l'information dans la salle de classe. D'ici à l'année 1998 on va réaliser la connexion pour 16.883 enseignants à partir de 5.082 centres.

6. **Durée:** Le programme a été créé en 1989 et il est actuellement en cours.

7. **Description et Application de la Politique/du Programme/de l'Action:**
Le programme est réalise moyennant une série de projets caractérisés toujours par un dispositif de formation des formateurs. Parmi les plus importants on peut énumérer: Aldea, Digital, MENTOR (système de tutoring télématique en fonction depuis 1991 offrant des cours ouverts et flexibles portant sur des sujets différents qui est déjà utilisé par 8.000 élèves), Atenea, Mercurio. Le programme est réalisé aussi grâce à la création de deux centres de recherche et de développement pour l'éducation, le CIDE et le CIDEAD, qui ont contribué à l'institution d'un réseau national de documentation et d'une base de données concernant l'éducation.

8. **Contenu politique explicite:**
a) Formation des formateurs concernant les technologies multimédia adressées à l'éducation à distance.
b) Mise à disposition des outils de travail adéquats pour les étudiants et les enseignants.

9. **Contenu politique implicite:**
croissance du marché du multimédia et des télécommunications. Augmentation de la compétitivité des ressources humaines.

9. **Bénéficiaires directs:**
a) Les étudiants
b) Les jeunes et les adultes qui vivent dans des zones rurales très éloignées
c) Les enseignants, les formateurs et les tuteurs

11. **Intégration avec d'autres politiques/mesures/programmes:**
PROJET FORCIENCIAS: ce projet vise à réaliser la formation continue des enseignants de sciences pour la télévision hispanique-américaine. Il s'agit d'une coproduction internationale de produits pédagogiques par l'adoption d'une approche concrète.

12. **Résultats et échecs principaux:**
Eléments innovateurs: la définition de nouvelles méthodologies de formation en ODL; l'utilisation de nouveaux types de soutien éducatif (tutoring) à choix entre le système traditionel et par système télématique; l'utilisation de la télématique, de l'interaction, de la classe virtuelle. La flexibilité totale de l'enseignement et une composante technologique considérable. Les échecs (ou plutôt les difficultés) sont représentés par l'aspect de la télématique, qui est parfois trop avancé et non immédiat pour ceux qui ne maîtrisent pas parfaitement les nouvelles technologies.

13. Critères du succès et évaluation de la performance de l'initiative:

Il existe une activité d'évaluation de chaque mesure (Mentor, Du clou à l'ordinateur, etc.) L'évaluation d'un certain nombre de cours est réalisée par des organismes extérieurs.

14. Probables développements/plans futurs:

L'expérience peut être transférée et les cours peuvent être réalisés dans d'autres contextes et par d'autres usagers. Le niveau élevé de flexibilité signale l'adaptabilité des cours et des contenus à des contextes différents.

Matériel disponible sur le site WWW (Internet):

http://www.pntic.mec.es/sistedu/folleto.htm
http://www.pntic.mec.es/proyectos/mentor44.htm

ANNEXE

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ADDRESSE DU SIT WEB ET DE LA WEB CONFERENCE DU PROJET

Les informations sur le projet ODL Policy Seminar sont disponible sur le **Website**: http://www.odl.org

Le système permanente de **Webconference** sur les politiques ODL est disponible à l'adresse suivante: http://webconference.nettuno.it: 8082/~101

ODL POLICY SEMINAR PROJECT

Cet ouvrage a été réalisé par Scienter avec la collaboration des **organisations participants au projet ODL Policy Seminar**

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- **SCIENTER** - Claudio **Dondi**, Monica **Turrini**, Alexia **Boninsegna**

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ΑΡΧΕΙΟ "TRENDS"
Ν.Ι.Κ. 15/9/98

Date sent: **Tue, 15 Sep 1998 08:54:53 +0200**
To: **kastis, "George Tsakarisianos" <gtsaka>**
From: **alain.bethuys@mesr.fr (alain.bethuys)**
Subject: **Concluding meeting of TRENDS project**

Dear Mr Kastis and Mr Tsakarisianos,

I have noted that the concluding meeting of the European project Trends will be held in Athens, 16-18 September 1998. Thank you for your invitation to take part in the User Group on September 17.

The Trends project allowed the School Leaders and the 4 académies of Caen, Créteil, Rennes and Antille-Guyana, to carry out a reflexion on the training activities to be started for the teachers in order to allow a development of the uses in teaching. The method selected in France for these training activities, which consists in an evaluation of Internet sites and the feeding of ressource databases of interest for teaching, is particularly interesting. It allows in particular, thanks to the exchanges between teachers, to disseminate in a very concrete and operational way, the methodological knowledge necessary to use these new tools in teaching.

This work is currently being reinvested within the framework of the national project Educasource, the objective of which is to facilitate teacher access to the resources of teaching interest and to exchange in connection with these resources. This service, which will open on September 30, will be accessible from the servers of the ministry of national education http://www.education.gouv.fr (institutional site), http://www.educnet.education.gouv.fr (teaching site).

I do not doubt that the work undertaken in France can be enriched by the reflexion carried out by the various partners implied in the TRENDS programme and I wish to benefit from the experience accumulated at European level. I shall not be able to be present at the concluding meeting. The link with the service of the ministry on this project will be done by Mr. Jean-Pierre Igot, director of CRDP of Rennes, who pilots this project for France and will be present in Athens, together with of Miss Isabelle Estève, documentalist at the CRDP of Caen.

Best regards

Dear Mr Kastis and Mr Tsakarisianos,

J'ai bien noté la réunion terminale de conclusion (concluding meeting) du projet européen Trends qui se tiendra à Athènes du 16 au 18 septembre 98. Je vous remercie pour votre invitation à participer aux travaux du "user group", le 17 septembre.

Le projet Trends a permis aux "school-leaders" et aux 4 académies impliquées Caen, Créteil, Rennes et Antilles-Guyane, de mener une réflexion sur les actions de formation à engager auprès des enseignants, pour permettre un développement des usages pédagogiques. La méthode choisie en France, consistant à s'appuyer, pour ces actions de formation, sur une évaluation de sites Internet et l'alimentation de bases de ressources présentant un intérêt pédagogique est particulièrement intéressante. Elle permet en particulier, grâce aux échanges entre les enseignants, de diffuser de manière très concrète et opérationnelle, le savoir faire méthodologique dans l'utilisation de ces nouveaux outils dans l'enseignement.

Ces travaux sont actuellement réinvestis dans le cadre d'un projet national, le projet Educasource, dont l'objectif est de faciliter l'accès des enseignants aux ressources d'intérêt pédagogique et d'échanger à propos de ces ressources. Ce service, qui ouvre le 30 septembre, sera accessible à partir des serveurs du ministère de l'éducation nationale http://www.education.gouv.fr (site institutionnel), http://www.educnet.education.gouv.fr (site pédagogique).

Je ne doute pas que les travaux menés en France puissent être enrichis par la réflexion menée par les divers partenaires impliqués et je souhaite tirer le meilleur profit de l'expérience accumulée au niveau européen. Je ne pourrai pas me rendre à cette réunion terminale de conclusion (concluding meeting). Le lien avec les services du ministère sur ce projet sera réalisé par M. Jean-Pierre Igot, directeur du CRDP de Rennes, qui assure le pilotage de ce projet pour la France et qui se rendra à Athènes, en compagnie de Mlle Isabelle Estève, documentaliste au CRDP de Caen.

Veuillez agréer, Monsieur, l'expression de mes sentiments distingués.